

Kim Stirling
KIMBERLEY
HELEN ABORIGINAL ARTS RANG

Kim Stirling
With
John Stanton

Northern Territory Museum of Art and Science
Monograph Series

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**RIJI AND JAKULI:
KIMBERLEY PEARL SHELL IN ABORIGINAL AUSTRALIA**

KIM AKERMAN

WITH

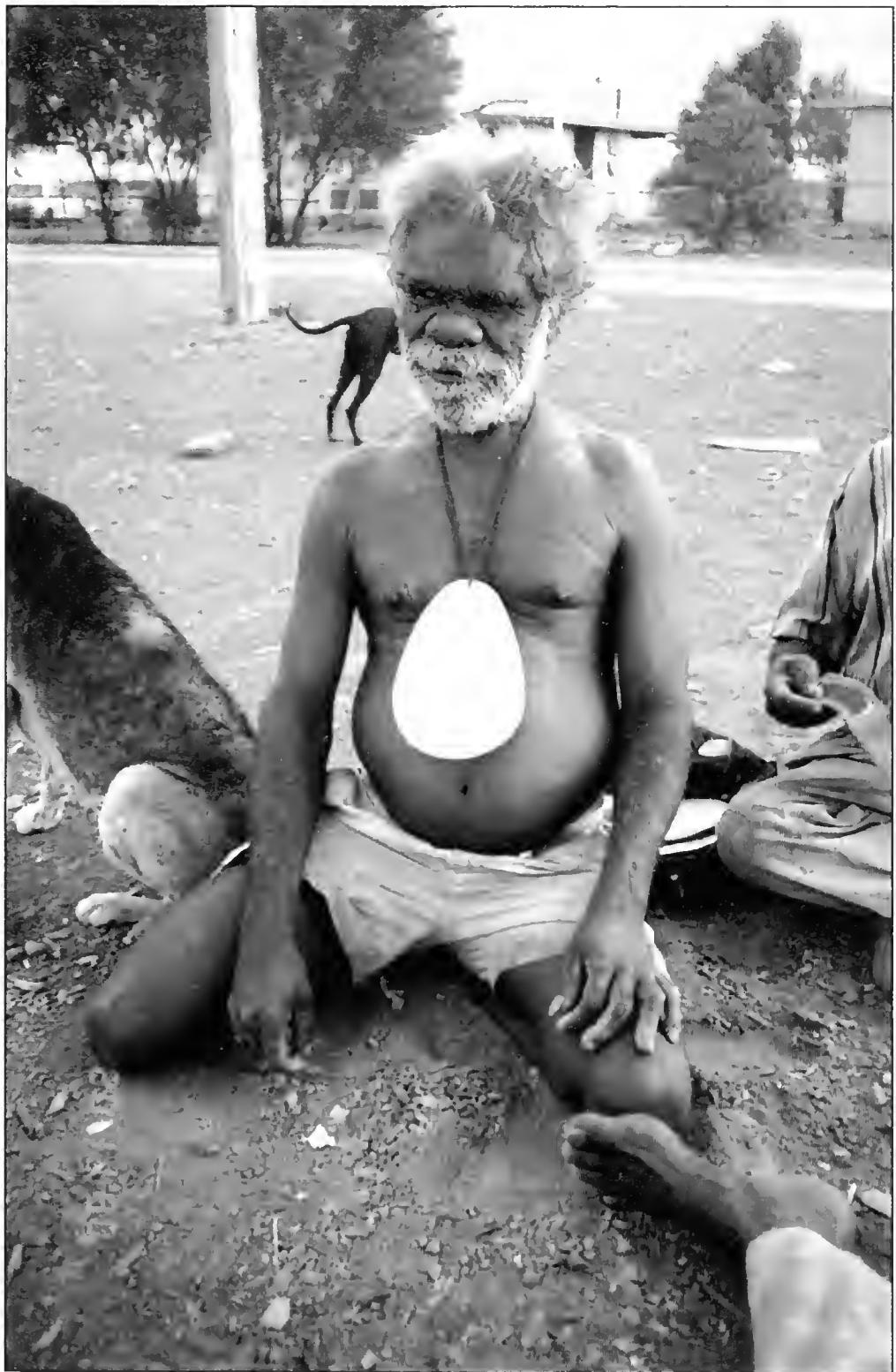
JOHN STANTON

Northern Territory Museum of Arts and Sciences

MONOGRAPH SERIES

Number 4

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"This is for everybody - man and woman. This is rain. This everything water" Mumbadadi, Christmas Creek, 1990.

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FOREWORD

Although it remains largely unrecognised by white Australians, Aboriginal culture is extremely complex and essentially dynamic, while its art encodes many meanings. Such realities are documented in this satisfyingly comprehensive and detailed examination of a regional ethnographic feature: the use, decoration and distribution of pearl shell. In addition to non-Aboriginal students, those Aboriginal people interested in learning about this rich variation of regional culture may consult it freely, because its illustrations and text are public, not secret, and shells are used widely by both females and males.

This monograph contributes positively and with factual detail to the comprehension of the nature of Aboriginal ceremonial life, and the rapidity with which it adapted and changed through time. European academic appreciation dates from anthropological research during the 1930s. W.E.H. Stanner described "ceremonial economics" in the Daly River area, while Donald Thomson discerned a "ceremonial exchange cycle" in northeastern Arnhem Land. F.D. McCarthy published his classic study of "trade" on a continental scale in 1939. Just before McCarthy's synthesis, D.S. Davidson and C.P. Mountford had emphasised the ceremonial, economic and artistic importance of Kimberley pearl shells within a wider context. All subsequent studies, referred to in this memoir, simply elaborated upon such perceptive pioneer anthropological papers.

The value of Akerman's and Stanton's systematic monograph is that it assembles excellent pictorial material, together with information gained from publications (including several rare and little known papers) and museum ethnographic information. Most important, however, is the oral information largely gathered by Kim Akerman during his extended experience living amongst Kimberley people. Over 800 engraved pearl shells are involved in the impressive sample investigated. Such familiarity enabled the recognition of individual artists.

There are numerous perceptive observations, which future researchers should take into account. As with Arnhem Land bark paintings, designs and symbols mean many things, as meaning varies regionally and according to the personal status and ritual knowledge of individuals.

Temporal factors are highlighted, with wide implications for social and artistic change throughout Australia. Amongst such challenging data are evidence that shells were exchanged across 400 km within twenty years, during the period 1939-70; that the characteristic interlocking key design was adopted by people living hundred of kilometres distant from the coast; that this motif itself, for which D.S. Davidson invoked Bronze Age Indonesian origins, was applied to shell only after the 1920s although the design was engraved on wood prior to 1900; that the eastern limits of Kimberley shell distribution approximate the eastern boundary of the circumcision rite; generally, that the growth and spread of shell ornamentation is essentially a recent phenomenon, largely within this century, and that plastic may be used not only as a substitute for shell, but that it is identified as shell.

The authors' suggestion that the art of scrimshaw, practised by nineteenth century whalers visiting the west coast, may have inspired local artists, merits consideration. Such a derivation in no way denigrates the intellectual and innovative qualities of Aboriginal adaptations. Inventiveness, fluidity of design, variety in motifs and the many meanings of symbols, are apparent throughout this comprehensive record of the social and geographic interconnections within this unique human culture.

JOHN MULVANEY

PREFACE

This study focuses on a single class of objects, made of pearl shell, that originate on the Kimberley and north-west coasts, and which are widely distributed over much of the western half of the continent of Australia.

Australian Aboriginal use of pearl shell has always fascinated me, and since 1965 I have gathered information on the topic from Aboriginal people across Western Australia and the Northern Territory. These primary data have been further expanded by extensive reading of the available ethnographic literature, the examination of Aboriginal pearl shell in both museums and private collections, and discussions with many of my colleagues. My intention is to produce an holistic study of Kimberley pearl shell which examines a range of contexts: from procurement and manufacture, beliefs associated with the material, its function in the past and to the role it plays in the socio-economic and religious lives of contemporary Aboriginal Australians.

In 1981, John Stanton approached me about data he wished to use in a paper he was preparing for the Anthropological Society of Western Australia. This paper was subsequently published under the title "Pearl Shells and Hair Belts" (Stanton 1981). There was, however, much more information available that, it was felt, ought to be incorporated into any new work dealing with Aboriginal pearl shell. John and I discussed the possibility of producing a monograph on the topic; a task, for which I had already assembled considerable data. This study is the outcome of our collaboration.

I am responsible for the writing of the text of this monograph and John Stanton responsible for the assembling and preparation of the plates.

We hope that this study will appeal not only to those interested in the fascinating topic of Australian Aboriginal art but also to Aboriginal people, aspects of whose rich cultural heritage we have been privileged to share.

KIM AKERMAN
Darwin,
Northern Territory

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Having been involved in this study for such a protracted period of time, I have accrued many debts. Principally I wish to acknowledge those Aboriginals, many of whom are now deceased, who spent untold hours discussing with me the subject of pearl shell and its role in their various societies.

Particularly, I wish to record my debt to Nellie Nudgeaway, Elkin Umbagai, Albert Barunga, Sam Woolagoodya, George Jomeri, Big Miek Kankinang, Essie Wallesi, David Wiggans and Buteher Joe Nangan, now all deceased. Their open warm friendship and concern with my quest for understanding will never be forgotten.

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To these and the numerous other men and women with whom I have worked, I can only say from the bottom of my heart, thank you.

I am indebted for permission to reproduce images of works of art generously granted by Mrs. Mary Maeha (for use of works by Buteher Joe Nangan), Clare Albert and the Albert family of Broome (for works by Basil Albert) and Placid and Ludivina Undalghumen (for permission to reproduce the Wandjina (Plate 47) painted by Alex Minjilmarnnganu).

I am also grateful for the support, debate and insights provided by John Mulvaney, Betty Meehan, Peter Bindon, Luke Taylor, Wally Caruana, Athol Chase and Richard Willan all who have, at one time or another, read and commented on drafts of the manuscript as it developed. To Father Hillaire Valquette, Ms Mella Parshen-Kempfer and Ms Chris Tomat I am indebted for the translations they provided of the non-English references consulted. Dick Kimber generously provided a tracing of the reverse side of the *Kookaburra* pearl shell which is Figure 2 in this monograph.

Institutions which have at various times allowed me to examine their collections of pearl shell and relevant records include the Berndt Museum of Anthropology, University of Western Australia, the Australian National Galleries, the Australian Museum, the Macleay Museum, the National Museum of Australia, the Queensland Museum, the Museum of Victoria, the South Australian Museum, the Western Australian Museum and of course the Museum and Art Galleries of the Northern Territory. John Stanton, in the course of collecting information on pearl shell held in overseas collections, received generous assistance from the University of Western Australia.

I cannot thank John enough for amassing and preparing the plates that make up such an integral component of this study.

For the most willing and patient cooperation I have received from Joanne Adams, Angela Rooke, Sally Irvine and Lorna Gravener, my thanks. Their expertise on the word processor and the time they expended on the preparation of various drafts of the manuscript over the years is deeply appreciated. My thanks also to Nadene Jones for her preparation of the maps and figures.

Finally, I must acknowledge the interest and support I have received, since my student days, from the late Emeritus Professor Ronald M. Berndt.

KIM AKERMAN

INTRODUCTION

Australian Aboriginal use of pearl shell for secular and other purposes has been noted from an extremely early period of contact. Woods (1943: 39) records that Freycinet in 1818 at Shark Bay, Western Australia, noted "an old man painted with stripes of various colours and distinguished from the rest by a shell hanging from his girdle." Martin and Panter (1864: 45, 86) recorded the manufacture and use of ornaments of pearl shell at Roebuck Bay, and obtained the name *iredzi* for the shell. The pearl industry itself, in north-west Australia, was stimulated initially in 1861 by shell traded by Aboriginals in the vicinity of Nichol Bay, to members of the exploration team headed by A. C. Gregory (Gregory and Gregory 1884: 73). Pearl shell artefacts from Broome were illustrated and described by Saville-Kent in 1897.

However, scholarly attention has been focused generally on the distribution of pearl shell objects within Australia, investigating the ceremonial and economic trade routes that covered the continent like a lattice. The art depicted on pearl shell has received little attention, with papers by Foy (1900-1901), Mountford and Harvey (1938) and Davidson (1937, 1938, 1949) being the only significant contributions. Mountford and Harvey (1938), Kaberry (1939), McCarthy (1939), Falkenberg (1962), Tindale (1974), Mulvaney (1969, 1976), Micha (1970) and Mountford (1976) all have examined the role of pearl shell in economic exchange cycles, as well as recording other functions that it had in Aboriginal society. Mountford and Harvey (1938) used a typological approach for their examination of pearl and baler shell objects. Davidson (1949) detailed the spread of the "interlocking key" design on shell and wooden objects, from its apparent point of origin amongst the Karadjari, on the Eighty Mile Beach area of Western Australia, across the western half of the continent.

It is my intention here, drawing together the available data in the literature, and my own observations over a period of twenty years, to provide an holistic study of Aboriginal pearl shell derived from the north-west coast of Australia. Aspects of this work include an examination of engraved shell as an art form, and as an expression of the socio-cultural values held by the Aboriginal groups which manufacture, utilise, and trade in these fascinating objects.

It should be noted that all the items that are discussed and illustrated are secular in nature; they do not lie within the realm of the secret-sacred. In general, pearl shell art is not held to be secret. However, the objects themselves may, from time to time, be used either centrally or incidentally in a wide range of ritual and ceremonial activities, some of which may be of a secret-sacred nature. Individual shells may also be placed in caches of sacred objects associated with a specific ceremony and remain in this context. Apart from noting that this does occur, no further comment is made on such matters.

The meaning and significance of the designs engraved on shell may vary from one area to another and more importantly, from one situation to another. Just as access to knowledge in Aboriginal Australia is circumscribed by sex, age and status, so too are the meanings and significance of shell designs. Consequently, one cannot say that there is just one and only one meaning for any particular design or symbol. Many meanings or interpretations are related to regional perspectives, the use to which the shell is put, as well as to the level of knowledge to which one is party. Some shells may be worn publicly, exhibiting a public meaning in one context, while simultaneously possessing an inner or secret meaning within another. Shell use is not a male preserve, for women and children may also possess or wear pearl shell either as personal ornaments or in ritual contexts. In the Kimberley these pearl shell objects are generally known as *ri:ji* or *jakuli* when large and *pinjapinja* when small. The term *longkalongka*, initially a central Australian term for both baler and pearl shell pendants, is now also widespread in Western Australia.

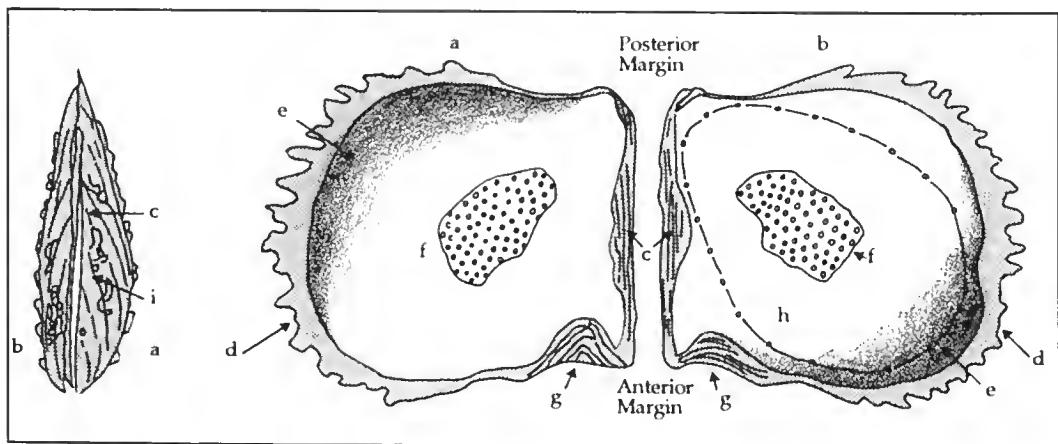


Fig. 1. Pearl shell nomenclature: **a**, right-hand valve or round valve; **b**, left-hand valve or flat valve; **c**, hinge line; **d**, marginal calcareous layer of fingers; **e**, nacreous or pearly surface; **f**, adductor muscle scar; **g**, byssal notch; **h**, area enclosed by dashed line is preferred for the manufacture of large pendants; **i**, outer calcareous surface.

PROCUREMENT AND MANUFACTURE

There appear to have been two major areas in Australia from which pearl shell was obtained. The main and certainly primary source of engraved shell was the north-west coast of Western Australia between Port Hedland and the Buccaneer Archipelago. The other major area was Cape York Peninsula, but pearl shell from there was generally undecorated, while some of the shapes into which it was ground reflect Torres Strait influence. Although Cape York pearl shells were part of a limited trading network, they were not as significant an element in local traditions as shell was in Western Australia. Examples of pearl shell objects from Cape York are provided by Sehall (1985). As Cape York is outside the scope of this study, no further reference to pearl shell from this region will be made.

The main pearl shell sought by Aborigines in Western Australia was the "gold lip" *Pinctada maxima*. Occasionally, objects were made from the smaller "pearl oyster" *Pinctada albina albina*. In the northern Kimberley, small ornaments, often incised with fine line naturalistic figures, were made from the translucent valves of the "window-pane" shell *Placuna placenta*.

Shell was gathered, as it still is today, by "dry shelling" or "reefing" at low tides. Larger examples of *P. maxima* are obtained during equinox tides, when usually inaccessible reefs and shell beds become exposed. The Bardi, Jau and Ongkarango of the Buccaneer Archipelago used rafts to visit offshore reefs to collect shell.

The only references I have been able to find to ritual involved with shelling activities are made by Piddington (1932a: 391-393), who describes the totemic activities of the Karadjari of the Eighty Mile Beach. Two pearl shell rituals were performed at Birdinapa Point. The first aimed to produce calm weather and ideal conditions for the collection of pearl shell available on reefs exposed by the equinoctial tides. In the second ritual the assistance of the bowerbird ancestor was invoked by rubbing a large rock representing his metamorphosed body. This action, coupled with verbal requests for a plentiful supply of shell, ensured that large quantities would be obtained. The latter ritual was controlled by men of the *Panaka - Paljari* patrimoietry (Elkin 1933: 286). This ritual possibly refers to the fascination that bowerbirds have for bright objects, collecting and hoarding them at every available opportunity. By invoking the assistance of the bowerbird the shell gatherers enhance their own ability to locate shell.

From the 1870s pearl shells were also obtained from lugger stations along the coast. Today, many shells are seen bearing evidence that they originated at cultured pearl farms, in the form of circular scars where cultured blister pearls have been drilled free.

Live pearl shells were opened either by exposing them to the sun, or by placing them beside a fire. Heat causes the mollusc's adductor muscle to relax, making it possible to pry the valves apart and sever the muscle. The placing of hot ashes on shell as a preliminary procedure to grinding the shell is reported by Mountford and Harvey (1938: 115).

Usually the "flat" or left-hand valve of the shell is decorated; however engraved "round" or right-hand valves do occur. The "flat" valve, as its name suggests, provides a relatively level inner surface on which to engrave, in contrast to the markedly concave surface of the "round" valve (Fig. 1).

The brittle "fingers", and wafer-thin margins of the calcareous layer are chipped away until the solid nacreous body of the valve is reached. Retention of the natural edge leads to rapid radial marginal fracturing as the shell dries, and consequently its removal is vital. The rough, thick outer surface of calcareous layer is usually carefully flaked and "picked off" with hammerstones and bone or wood punches, or, as is the case today, with chisels or similar metal tools (Plate 1).



Plate 1. Removing the rough outer surface of pearl shell valve, Balgo, WA.



Plate 2. Grinding and smoothing the back and margins of a pearl shell. Mowanjum, WA.



Plate 3. Pearl shell engraved so that the adductor muscle scar forms the belly of the *Miritumiritu* spirit figure. Broome, WA: **a.**, *Ramu*, zigzag motifs; **b.**, *Miritumiritu*, bush sprite who can act as a supernatural messenger; **c.**, female *Ravi* spirits; **d.**, *Mamarara* eyes, the eyes of *Tarbayi* - old woman spirit which live at Mantakarrakapin; **e.**, two men participating in ceremony; **f.**, *Tarbayi* spirit being holds her firestick *pandartku* between her legs, keeping herself warm; the firestick keeps humans awake; *Tarbayi* spirits may also irritate people, poking them with digging sticks; **g.**, flowers of the *ngauaumingkud* tree; **h.**, *Pibnibbirr*, a messenger or newsman.



Plate 4. A small irregular pendant fixed with bitumen to a hairstring cord. Wiluna, WA.

Shell is ground, either wet or dry, on a sandstone or coral block. Sand may be added to enhance abrasion. Grinding smooths the flaked exterior and evens the margins (Plate 2). The area of thicker shell at the hinge line and byssal notch is ground down and thinned from both sides of the valve. Many early shells show that the knotted area of nacre that marks the adductor and pedal retractor muscle scars was also ground out. This area is not always removed today and designs may be organised around it. The innovative shell work of Butcher Joe (Nangan) often incorporates the scar and other natural features such as blisters into the design (Plate 3). The prepared shell may be roughly circular, oval, or pyriform, narrowing at the area of the posterior end of the hinge line. Margins are generally smooth, although shells with scalloped or serrated edges do occur in rare instances.

The shell is now ready for piercing. Not all prepared shells were pierced for suspension and others were pierced after engraving had been completed. Shells that were not pierced may be attached to suspension cords with resin (often nowadays with bitumen), or were intended to be bound onto and incorporated into composite ritual objects (see Worms 1950: 654; Berndt 1974: 10, Berndt *et al.* 1982: 112). Smaller pearl shell objects may be pierced, but these are often fixed with resin or bitumen to suspension cords (Plate 4).

Pearl shell was perforated in one or other of the following ways. Two deep grooves at right angles to each other, one on each side of the valve, were sawn or incised into the shell with a stone flake. The intersection of the midpoints pierced the shell and the hole was then reamed out. More commonly however, hand held flakes (and later, knives or other metal tools) were used to drill into the shell from opposing sides; the resultant hole possessing a biconical section. Metal tools may be also used to gouge out asymmetrical holes. The holes were then usually enlarged by reaming, thus often obliterating all traces of the method of initial perforation (Plate 5a-c).

One to three suspension holes may be drilled. Shells with more than one hole are usually found in the Western Desert areas, where they are used to support an attached pubic tassel. However, Campbell and Bird (1915: Plate VI, No. 1) illustrate a shell from Sunday Island, Western Australia with triple perforations. Multiple perforations provide firmer attachment to the suspension cord or hair belt and also restrict the tendency of the shell to move about.

Today, both cleaning and piercing of shells may be done with mechanical and electric grinders and drills. These tools usually leave distinctive traces on the shell. Unless obliterated by further smoothing, grinding wheels leave shallow concavities in which striations, parallel to the linear orientation of the hollow, are visible. Electric drills make clean holes with parallel sides and sharp margins. Both types of machine, unless used carefully, are apt to create "dead" patches of calcined shell by overheating the nacre. Many recent shells are minimally prepared on the outer surface, the outer calcareous surface being left in a natural or rough condition with only the valve margins being levelled.

Not all shells were engraved. For example, an unengraved shell, pierced for suspension, was a public emblem indicating a certain level of initiation among the Bardi and Nyulnyul of the Dampierland Peninsula (Plate 6). Spencer and Gillen (1899: 573) did not see any decorated shell among the Central Australian groups with whom they worked, but they did see plain pearl shell pendants in use. In 1875, at Ularing rock hole in the Eastern Goldfields of Western Australia, Giles (1889: 217) saw a large plain pearl shell being worn as a pendant by an Aboriginal male who had come into his camp. In 1896 Carnegie (1898a: 243) mentions finding carefully wrapped pearl shell at Family Well, 800 km inland from the coast. It is presumed that they were plain for he does not mention engraving being present. Unmodified shell valves are included in trade parcels moving south and east from the Kimberley region today. It is understood that these are to be finished at other centres. Evidence for the preparation and engraving of shell objects has been observed at Timber Creek Depot, Wiluna, Balgo Hills, Christmas Creek, Gordon Downs and the Warburton Ranges.

Pearl shells are usually engraved on the lustrous inner face, where the nacre forms a clean, even surface which enhances the design, particularly after ochre or charcoal has been applied to infill the engraved areas. The backs of shell are rarely engraved for, even when cleaned, they usually bear traces of worm holes and other blemishes. In addition, the back of the valve consists of older shell which has a tendency to flake. Some shells do have incised motifs on the back; these motifs are usually of relatively recent origin. In some instances the artist has used the back of the shell to test the cutting edge of the engraving tool, or to experiment with the layout of a design.

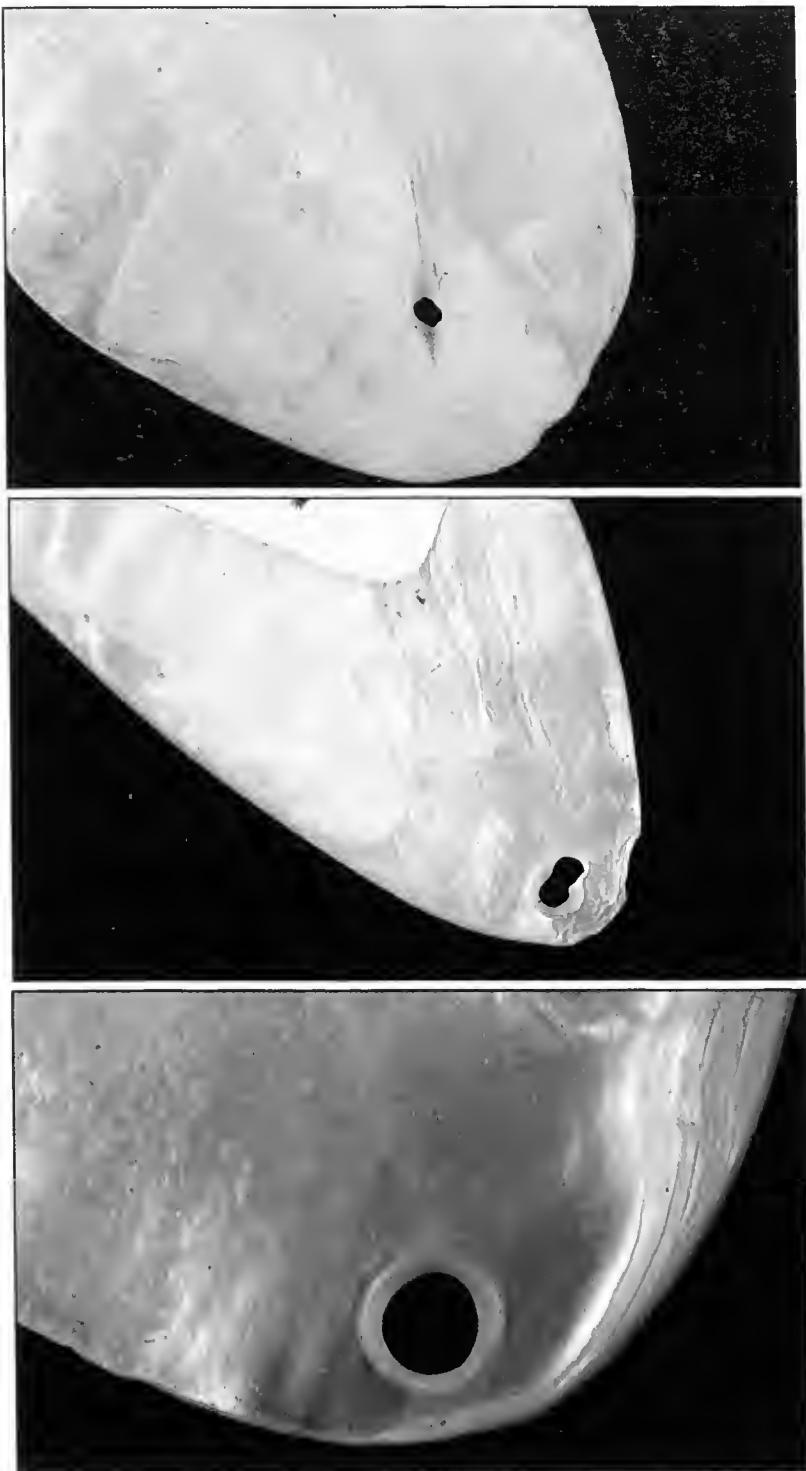


Plate 5. Details of perforations found on pearl shells: **a**, shell pierced by sawing two grooves, one on each side of the shell and at right angles to each other. The perforation occurs when the grooves intersect one another. Broome, WA; **b**, shell pierced by drilling holes from either side. Misalignment has occurred in this instance. Dampierland Peninsula, WA; **c**, the perforation on this shell has been reamed to enlarge it, obliterating any traces of the original piercing technique. Dampierland Peninsula, WA.

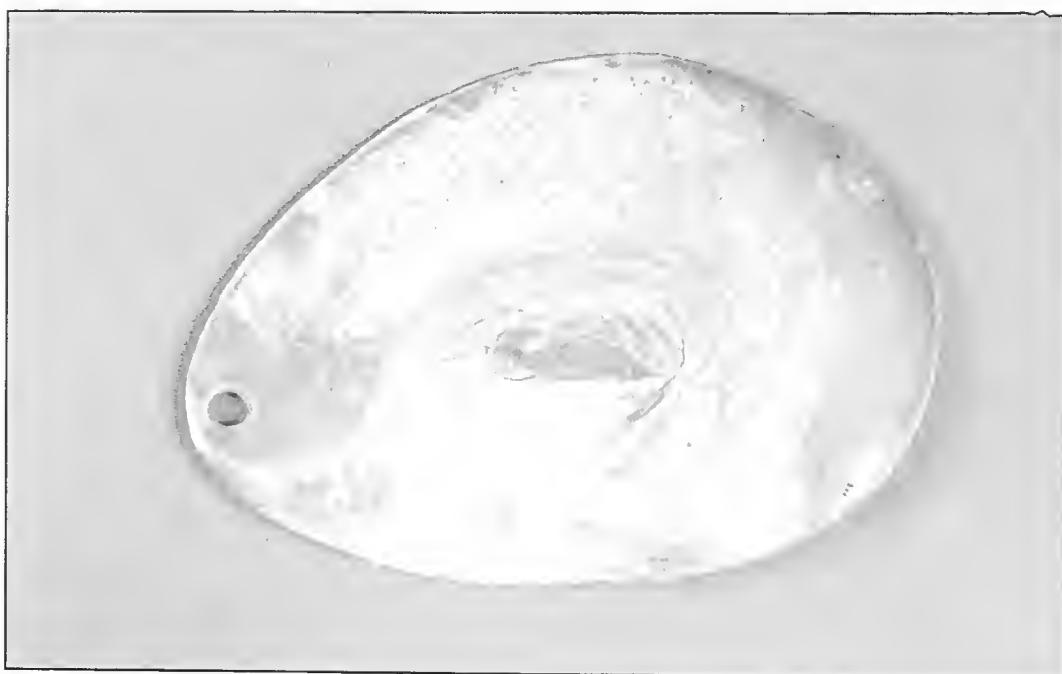


Plate 6. Large undecorated pearl shell of the type known as *kuvan* by the Bardi and Nyul Nyul, Dampierland Peninsula, WA.

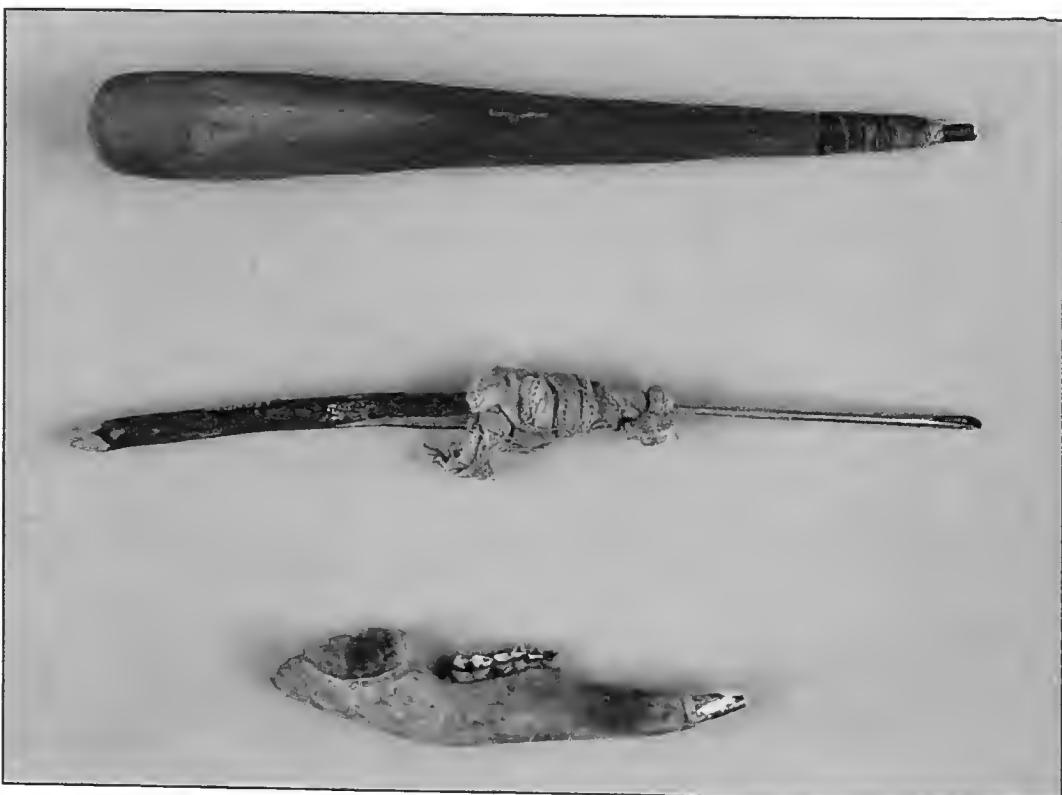


Plate 7. Engraving tools: **a**, reversed pen nib bound with sinew to a wooden handle, Warburton Ranges, WA; **b**, sharpened metal windscreen wiper arm bound to a stick handle with rags, Leonora, WA; **c**, kangaroo jaw with the tip of the incisor modified to form a gouge edge, Wiluna, WA

According to contemporary Aboriginal shell workers, engraving is best undertaken during the humid pre-wet season conditions at the end of each year. Then pearl shells are said to absorb moisture from the atmosphere and soften, making them more amenable to engraving. Shells have been observed soaking in buckets of water prior to engraving at centres such as Balgo, Gordon Downs and Wiluna. However, at Wiluna, shells are said to also occasionally be scorched on a fire to make them easier to engrave, a process which tends to calcine the nacre and reduce the lustre considerably. At Christmas Creek, pearl shell are said to be made "soft" and easier to engrave by either placing hot ashes on it or by soaking it in hot water.

Prior to access to metal, shells were engraved with hafted stone tools, or trimmed macropod incisors sharpened by snapping off the extreme tip (Plate 7a). The anterior end of the columella of a baler shell (*Melo amphora*) was said by some informants to have been used as an engraving tool on the Dampierland Peninsula. Experiments I have undertaken have shown that such a tool is unlikely to have been used to engrave shell. It seems likely that there were far fewer examples of engraved shells in relation to unadorned shells in pre-contact times. This possibility is discussed further in the section examining motifs engraved on shell.

Engraved shell has not been found in any archaeological context which can provide a pre-contact date for the art form. It is possible that the production of engraved shell only flourished with the introduction of metal into the north-west.

Peggs (1903: 327) observed Aborigines at Roebuck Bay in the 1890s using a nail to "serape" a "key" pattern onto a shell. The engraved pattern was then filled with a mixture of fat and red sand and this was "rubbed in until the shell has the appearance of being inlaid".

In his foreword to Barrett and Croll, Elkin (1943: xi), states that "the key-pattern on the shell (or 'apron') ... can only be worked to the accompaniment of the appropriate sacred chant. This particular key-pattern can only be engraved by men of the Karadjeri tribe at La Grange, north-western Australia, because they alone know the chant which gives the design meaning, and the object on which it is engraved power or 'virtue'".

Today, small engraving tools are made from a range of introduced materials. Dip pen nibs, reversed, and hafted as fine gouges, wire, windscreen wiper rods, screwdrivers, and the sharpened tangs of files - to mention but a few - have been observed being used as engraving tools (Plate 7b,c). The tool is held in the palm of the hand with the cutting edge emerging from beneath the little finger at the lower side and the haft braced by the thumb. As with all Aboriginal engraving and adzing tools, it is drawn towards the worker when being used (Plate 8a,b). Several Aboriginal pearl shells have been seen on which the engraving has been executed with high-speed dental type drills.

The tips of knives and sharpened tangs of files are also used to engrave shell, in a manner that leaves quite characteristic patterns of application. The tip of the blade is held firmly between the thumb and second finger, with the handle of the knife lying along the palm of the hand: the index finger is placed firmly along the back of the blade. By rocking the blade, the tip is forced into the nacre and is then moved forward and away across the shell surface by the craftsman. The resulting engraved line has a zigzag or wavy appearance, caused by the tip of the blade biting into the shell on alternate sides of the main axis of direction as it is rocked. The line varies in the width, in the density of the zigzags per centimetre, and in depth, depending on the rapidity and the amplitude of the rocking motion imparted to the blade and the degree of pressure exerted upon it. This technique is commonly used throughout the Kimberley region, when the large fruit or nuts of the boab tree (*Adansonia gregorii*) are carved. Designs can be applied far more rapidly by this method than using the conventional engraving techniques, and many recent shells are engraved in this fashion. Engraving can also be done by fine-line seratehing of a design with either a simple stone flake or, as is done today, with a sharpened knife point. It is apparent that with the less complex patterns such as random mazes, the engravings were applied with a minimum of design organization or planning. Similarly, in several types of formal motifs such as serried parallel zigzags, a minimum of advance planning was required for their execution. Complex designs, however, required a phase of careful forethought, planning and drafting, prior to actually engraving the shell. Maze and key designs engraved on natural pieces of friable stone have been observed on habitation sites along the Eighty Mile Beach. These are recognised by Karadjeri informants as preparatory sketches of designs which would later be engraved on pearl shell. In more recent times such sketches were first worked out with pencils on paper or directly onto the shell to be engraved.



Plate 8. Engraving pearl shell: a, using a modified screwdriver, Laverton, WA; b, using a pocket knife, Broome, WA.



Plate 9. A shell showing the superimposition of maze design over a lightly incised and partially infilled broad band design. Nicholson Station, W.A.

Engravings are usually enhanced by being infilled with a mixture of fat and either red ochre or powdered charcoal. Martin and Panter (1864: 86) noted that a mixture of vegetable gum and charcoal was also used for this purpose. At the original coastal centres of shell production, the prepared pigment was applied over the entire engraved surface of the shell. When the mixture had hardened, the raised interstitial areas were carefully cleaned by scraping and swabbing to restore them to their original lustrous condition, leaving the pigment lying within the engraved depressions. Today in many areas where shells are prepared, the ochres are usually only smeared on and then wiped away from the raised areas, a process which also often removes ochre from the engraved areas, particularly when they are relatively shallow. Ochres that have only been mixed with water prior to application appear to be less stable than those mixed with fat or resin. Properly prepared, the mixture of fat and pigment appears to be very stable. Engraved shells, associated with a 40-59 year old burial, found exposed in a blown out sand dune in 1975 at Hunter's Creek on the tip of the Dampierland Peninsula, retained much of their ochre infilling. Engravings do not always survive the life of a particular shell. Some shells appear to have been reworked with a succession of different styles. Engravings are also obliterated in order to provide a fresh surface for decoration, particularly when a broken shell is being reshaped (Plate 9).

Pearl shell is carefully curated. Shells are individually wrapped in soft bark or cloth and kept with an individual's personal possessions, often within the locus of a known cache of sacred objects. Occasionally individuals will cache shell in a location known only to themselves. I know of instances where such caches have been lost on the death of the owner. When "lost" caches are rediscovered, the shells may once again be incorporated into the ceremonial economic exchange system.

When a perforation on a pendant wears through to the margin, or is accidentally broken, new holes are made. If the damage breaks a shell object in half, resins may be used to repair the fracture. Mountford and Harvey (1938: Plate VIA) illustrate a shell collected in central Australia that was mended with resin and I have observed similar repairs being undertaken at Wiluna, Western Australia. Resin may also be used to re-establish the symmetry of a damaged margin of a valve, or to fill holes and cavities created by marine borers (Plate 10a,b). If an object is not repaired, two smaller shell objects may be manufactured from the fragments. The margins on smaller engraved shell objects often transect the engraving, indicating that the shell was originally part of a larger shell (Plate 11). Small fragments may be carefully saved, their margins smoothed, and utilised as personal charms.

A range of introduced materials are used as shell substitutes to construct pendants. Mountford and Harvey (1938: 126) describe a pubic pendant fashioned from a tin lid, collected on the Canning Stock Route, Western Australia. The lid was fastened by resin to a short length of hair string. It is not difficult to imagine that, when new, the shining tin would appear similar to a lustrous shell. The virtually indestructible material may have also enhanced the value of such a pendant. Green (1988: 64) relates how Aboriginal visitors to the Forrest River Mission would, on arrival, first visit the rubbish dump to get a tin lid. Suspended over the pubic region from a hair belt, the pendant supplied the modicum of decorum insisted upon by the missionaries.

Rose (1965: 160, Fig. 8) illustrates a simply incised oval of plastic said to represent, or be associated with, the sun. Rose intimates that the object, which he collected in 1962 at Angus Downs in the Northern Territory, was regarded as a piece of pearl shell.

In 1969, while examining a cache of shell at Laverton, Western Australia, I was shown a large pendant made from plastic: it was regarded as a pearl shell by its Aboriginal custodians. This pendant had been fashioned from the back of a large hairbrush made of light blue plastic with an opalescent sheen to it. The plastic had been engraved with a meander pattern and ochre infilling applied. It was said to have been brought to Laverton from Wiluna. Akerman and Bindon (1987: Plate 1) illustrate a small plastic pendant associated with love magic, obtained from a Wunambal man at Kalumburu. This pendant was originally acquired from a Warlpiri tribesman visiting Wyndham. This pendant, pierced for suspension, depicts a bird surrounded by a stippled border.

The engraving of shell in precontact times and up to the turn of the century appears to have been restricted to the north-west coast. This situation no longer appears to be the case, and key patterns and other motifs are now often executed at places far removed from the original centres. Engraving, particularly of the geometric designs, whenever it is done, is said to enhance the multiple virtues of the shell.

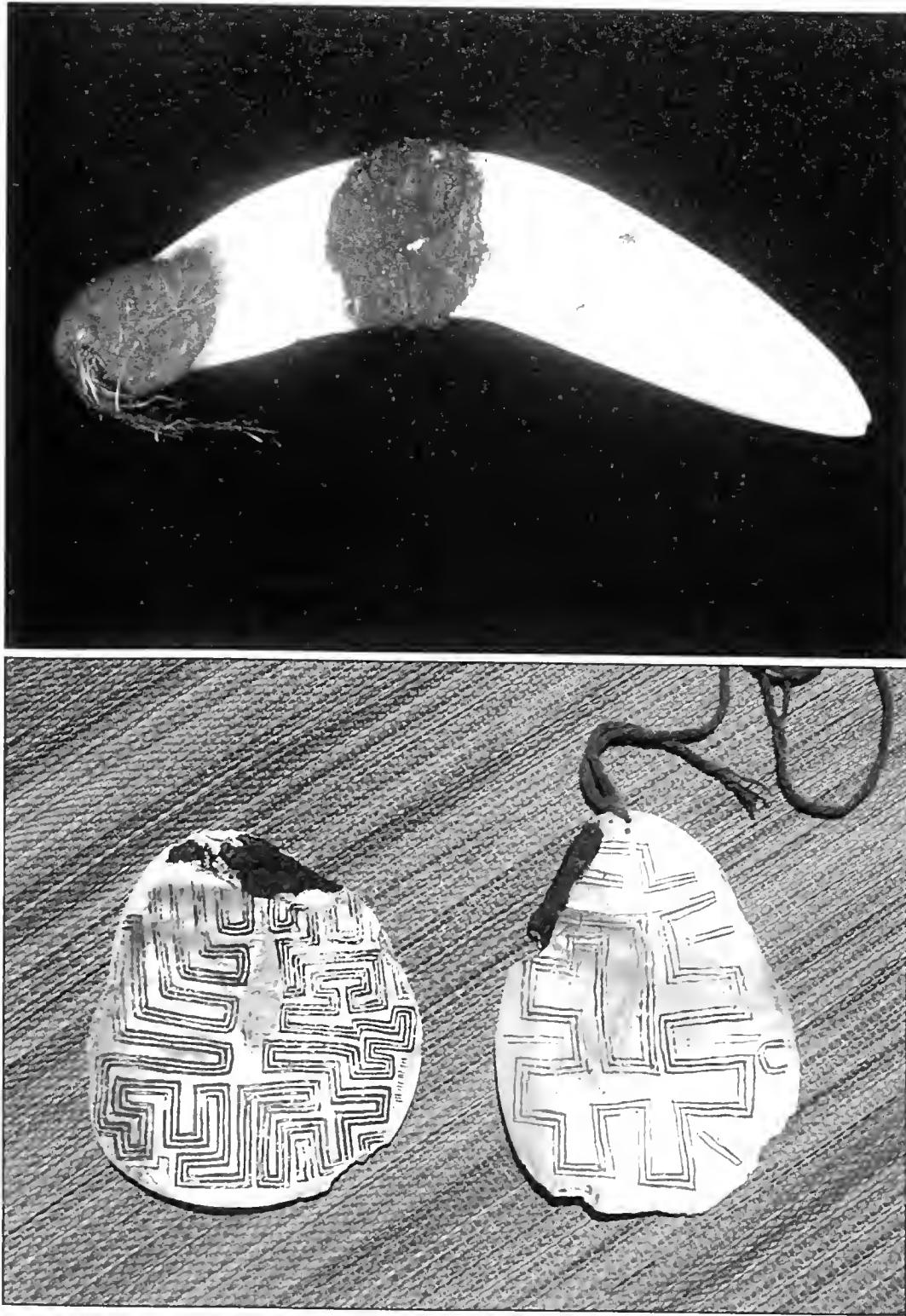


Plate 10. Shells repaired with spinifex resin. **a**, snapped shell blade with resin joining the broken pieces. Wiluna, W.A. **b**, the damaged margins of these two shells have been evened and reinforced with resin. Central Australia.



Plate 11. A broken and subsequently reshaped pearl shell, Gordon Downs WA.



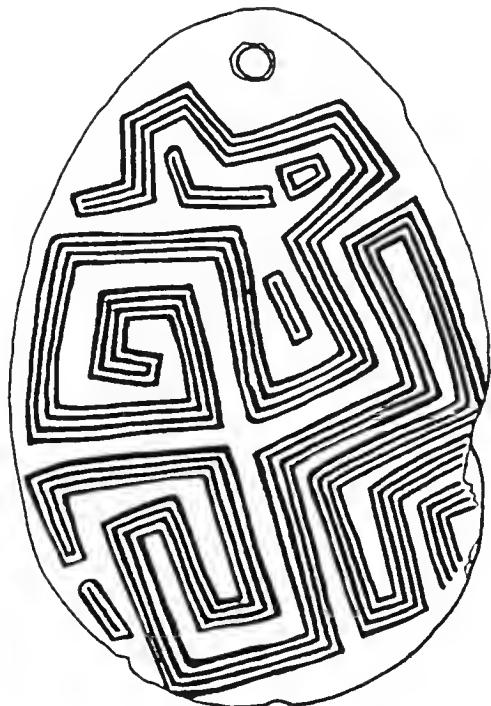
Plate 12. Two unprovenanced engraved shells compared with the design from a third (opposite) collected in the 1930s from Minilya Station, WA. All three appear to be the work of a single artist.

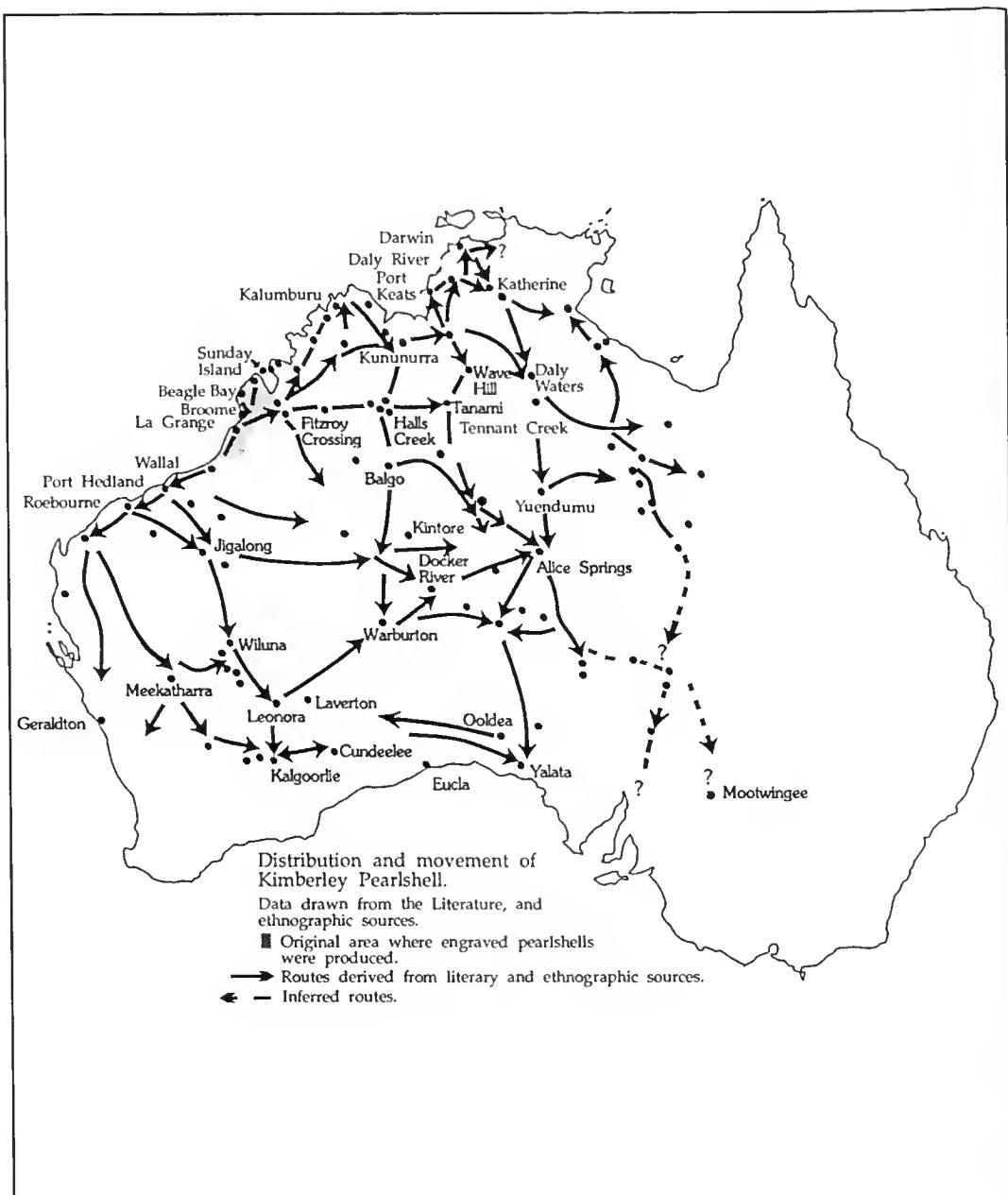


Plate 13. Plain pearl shells form part of a collection of material culture items assembled prior to exchange, Eastern goldfields, WA.

My examination of over eight hundred engraved shells indicated that many were carved by recognizable individuals. In shell carved in the geometric or non-figurative style, the arrangement of the design, the inclusion and nature of smaller interstitial elements and even qualities such as the breadth and depth of each engraved line, and its relative juxtaposition to adjacent lines that make up the total design element, may reveal the hand of an individual, but unknown, artist that can be identified in other shells (Plate 12). A similar situation exists naturally enough in the motifs, method of execution and general organisation or layout of elements in many shells engraved in the figurative styles.

Unfortunately information on the artisans themselves is sparse. Shells acquired in the past usually lacked information which might have allowed the identity of their makers to be determined. Attempts to identify individual artists have been generally unsuccessful. Although the actual identity of these artists is lost, there is no doubt that a number of individual artists each with a distinctive style, who had produced at least two, and often more, engraved shells, existed in the past.





Map 1.

THE DISTRIBUTION OF PEARL SHELL

McCarthy (1939: 92) regarded the distribution of pearl and baler shell ornaments as the most tangible example of distant trading relationships in Aboriginal Australia. From its origin on the north-west coast, pearl shell has been found along the Great Australian Bight to the south and as far east as the Boulia region in Queensland. Map 1 is based on the work of Mulvaney (1976: 83), and reflects the great trade routes that penetrate the continent. Map 2 details contemporary trade routes in the Kimberley. Both maps incorporate data I have collected between 1965 and 1991, and have been amended accordingly.

From examination of the literature and collections of Aboriginal pearl shell in Australian museums and elsewhere, it is apparent that in the late 19th century engraved Kimberley pearl shell had a far more restricted distribution than plain shells originating from the same area. Foy (1900-1901: 27) restricts the 1894 distribution of engraved shell to a one hundred mile radius of Broome. There are, however, engraved shells from the Roebourne region approximately 650 km to the south-west of Broome, collected at that period and now housed in the British Museum. Clement (1903) also collected engraved shell in the Roebourne area in 1896. Similarities between engraved shell collected at Sunday Island and shells collected nearly 1,600 km to the south in the Carnarvon district were noted by Campbell and Bird (1915: 56). They concluded that the latter shells had probably been conveyed south by barter. Tindale (1974: 83-85) outlines the exchange networks that introduced shell from the west Kimberley into both the Pilbara to the south-west, and the western and central desert areas to the south-east.

The Kimberley routes still inject shell today, usually natural valves or with incised innovative art work, into the adjacent Northern Territory, the Central Desert and the Pilbara. Harvey Johnston (1941) noted that pearl shell at Ooldea, South Australia, entered the region along trade routes from either the north-west or from the north. Shells at Ooldea were distinguished by separate names depending on their direction of origin. For example, those entering the area from the north-west were called *karrar*, those from the north *ling-gali*.

In 1973, shells (both natural valves and modified but unengraved plaques) were seen in a cache of objects received at Cundeelee in the southern Western Desert. The cache had come from Yalata in South Australia. Some of the shell exhibited circular areas where half-pearls had been removed - indicative of their origin from cultured pearl farms. In Western Australia, such farms have only been operating since 1956 so the shells had travelled from the Kimberley, through Central Australia to the coast of South Australia and returned to Western Australia, a minimum distance of at least 4,000 km in less than 20 years. More specifically, shells bearing the distinctive designs of the late Butcher Joe (Nangan) seen at Fitzroy Crossing in 1973 were observed three years later at Yuendumu, Northern Territory, 800 km to the south-east.

Daisy Bates repeatedly observed the use of shells during her long residence with Aboriginal people in Western Australia. She records the importance of pearl shell in exchange transactions throughout those areas of Western Australia with which she was familiar. One name by which the Wajarri of the Fields Find area, 380 km north of Northam, were known was "Wirdi Wonga", which can be glossed as "the people who use the word 'wirdi' for pearl shell" (Bates 1985: 63). Large shells known as *wirdi-wirdi* and *wira-wira* were obtained by peoples east of Meekatharra from the Ashburton tribes, who in turn received them from groups living further north. The name *wira-wira* may allude to the flat oval shape of the shell. In many Western Desert dialects, the word *wira* describes a small flat or shallow oval wooden dish often used as a digging implement. The Wajarri would pass shells

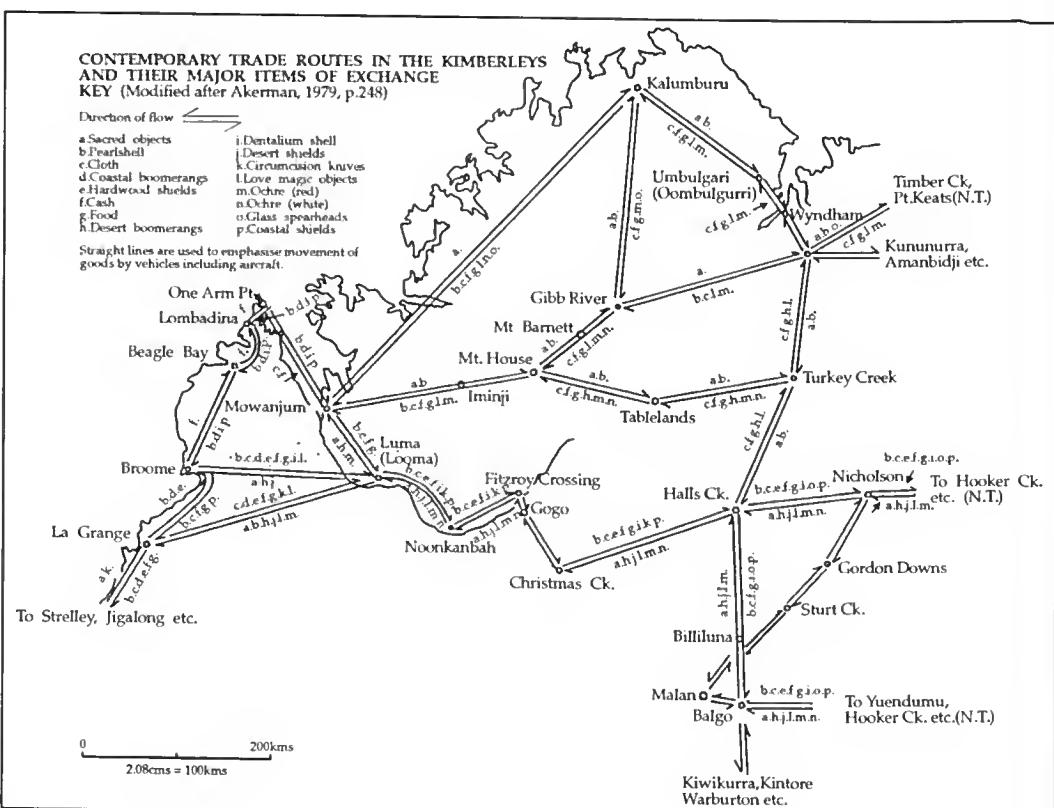
both to the east and to their southern neighbours, the Bibbulman (Bates 1985: 280). It is of interest to note that Gregory and Gregory (1884: 98) refer to a vocabulary of the language spoken by the Nickol Bay peoples (presumably Ngaluma speakers), where the word for pearl oyster was recorded as "weerdeee".

While it is clear that the centralisation of Aborigines on stations, missions and outstations, together with access to modern transportation, has reduced the time needed for goods to move between centres, it is probable that the movement of prestige goods in the pre-contact phase was also relatively rapid. The effect of modern transportation is the considerable increase in bulk or number of goods that can be moved at any one time.

The speed at which shell might have been exchanged in the past can be gauged by noting the rate at which other commodities are known to have been transferred along recorded trade routes. Mulvaney (1976: 91-92) analysed the transmission of the *Molonga* ceremony through western Queensland into the Northern Territory and onto the Nullarbor Plain. He estimated that this ceremony travelled over 1,600 km in twenty-five years, or about 64 km per year. This rate of exchange would have necessitated ceremonial parties meeting at various centres in days when modern transport was non-existent, and the various parties involved had to walk to mutually acceptable ceremonial centres. Evidence of the red ochre and pituri trade presented by McCarthy (1939: 87, 89-90) is also relevant here. It shows that these goods could be moved 320 - 480 km in a year.

As a young man, Wirilee James (a Walmatjari colleague) made at least two journeys with a small group of kinsmen, from the eastern central area of the Great Sandy Desert to the vicinity of Wave Hill in the Northern Territory. Each journey was on foot and took less than a year to complete, a round trip of at least 1,600 km. A small quantity of goods for exchange was taken on each trek. These trips took place some time between 1940 and 1955.

Falkenberg (1962), in his classic work on the peoples of the Fitzmaurice and Daly River areas of the western Northern Territory, notes that a person receiving a consignment of goods (including shell), retained the consignment for only three days before transferring it to his trading partner. In



Map 2.

one instance in 1950, a consignment of goods was followed by Falkenberg (1962: 143, 147-162) for at least 80 km from the point of introduction into the system. This consignment passed through the hands of at least 92 individuals. A third consignment noted by the same observer passed through 12 local group territories and 134 trading partners covering an estimated 216 km. My estimates are based on straight line distances between areas named by Falkenberg, consequently the distances quoted are regarded as minimal. While Falkenberg does not indicate the time interval involved in these transactions, it is presumed to have been less than the six months that elapsed while he was in the field.

Trigger (1987: 76) has seen pearl shell pendants, known as *jaramara* to his Garawa and Waanyi informants, in the Lawn Hill and Musselbrook areas of north-western Queensland. These people received shell from their western trading partners rather than from their more northerly neighbours who occupied the south-western coast of the Gulf of Carpentaria. According to Trigger, Aboriginal people say that the shell has a Kimberley rather than a more local origin. The Yanyuwa people of Borroloola receive *jaramara* pearl shell from the "Tablelands" region to the south. They in turn move it north-west to the Roper River area and south-east into Queensland (John Bradley, pers. comm.). Routes through Lake Nash, Lawn Hill and Musselbrook presumably account for the presence of the *che-ka-la-ri* pearl shell phalloerypts (pubic coverings) observed by Roth in the Leichhardt-Selwyn, Upper Georgina and Boulia districts of western central Queensland (Roth 1897: 113). Roth's brief description of the distribution of pearl shell phalloerypts reinforces the notion that such shells were derived from the west, rather than from either the Gulf of Carpentaria or Cape York. It may be important to note that Gillen (1968: 114) records that the Kaitish of Barrow Creek used the word *tchechura* for rainbow. While the similarity between the western Queensland name for pearl shell and the northern central Australian term for rainbow may be coincidental, it does reinforce the possibility that shells entered Queensland along a route that skirted the southern perimeter of the Barkley Tableland. Hodgkinson (1877: 12), in 1876, observed Aboriginal people transporting large shells at Coongi station in the far north-east corner of South Australia. These shells were derived from the north-west and, although it is not stated, may have been pearl shell. A pearl shell found on a surface site adjacent to Lake Cobham in north-western New South Wales and identified as originating from Thursday Island (Gerritsen 1976: 7), is just as likely to have originated in Western Australia, and entered New South Wales along trade routes skirting the northern Eyre Basin.

A large (9 x 3 cm), Kimberley biface, serrate-edged spearpoint of quartzite, found in a rock shelter on Kilmorey Station 40 km south-west of Injune in Queensland, is possible evidence of trade routes linking the Kimberley and the central Queensland region (G. Walsh pers. comm.). Traces of resin are present on the proximal end of the point, indicating that it was once hafted. Although no pearl shell has been found to date in the Injune-Carnarvon Range area, the presence of this speartip raises the distinct possibility of Kimberley pearl shell being transported this far east.

It may be significant that the eastern limits of Kimberley pearl shell distribution coincide approximately with the eastern boundary of that area of Australia in which circumcision was practised (Elkin 1968: 67). As pearl shell is in many areas an emblem given to an initiate after circumcision, I feel that there may be a direct link between the eastward expansion of the circumcision area and the movement of pearl shell that has not been previously recognised.

If the transmission of shell (and other goods) occurred at a relatively rapid pace, and if the practice is of some antiquity, it would be expected that shell would have had a wider distribution range than has so far been determined. It is possible, in fact, that the widespread use of pearl shell is a relatively recent phenomenon commencing prior to the arrival of Europeans and accelerating after contact.

The majority of the shell objects found at the periphery of the areas of known distribution are generally unengraved. This suggests that the engraving of shell was a more recent phenomenon than the use of the plain shell artefacts. It should be noted that Davidson (1949, 1953) has examined the distributions and historical data relating to engraved wood and stone artefacts in Western Australia and found them to be of relatively recent origin. Until sound archaeological evidence is available, the antiquity of the use of pearl shell at both the source and further afield is unknown.

Traditional exchange systems led, I believe, to a rapid spread of pearl shell over the western half of the continent. This accelerated in post-contact times with centralisation, and with wider and more rapid mobility, made possible by the use of horses, motor vehicles, trains, and today, aircraft.

THE UTILIZATION OF PEARL SHELL

Prior to examining the uses to which pearl shell is put in Aboriginal Australia, it is important to understand how pearl shell was perceived by Aboriginals.

Mountford (1976) provides a very clear appreciation, from his association with the Pitjantjatjara people of the Western Desert, of a meaning or understanding of the significance of pearl shell which appears to be consistent with those areas of the Kimberley, the Northern Territory and the Western Desert where I have worked. The Pitjantjatjara believed that the pearl shells were the concentrated essence of water. This animated essence lived to the west in the sacred waterhole of *Tapitji*. Medicine men, seeking the shell, would approach the waterhole in a manner that would disperse the Rainbow Serpent guardians of the site. Shells were then speared as they swam by. The suspension holes in the shells were the wounds left by the spear thrusts. After spearing, the shells were left to dry and harden in the sun. Mountford, in a footnote (1976: 275), however, states that some groups of Pitjantjatjara knew that shell occurred naturally on reefs and that they were left to open in the sun. Suspension holes were also recognised as the result of deliberate drilling. Despite the conflicting beliefs about the origin of pearl shells, they were perceived to be extremely potent objects. Elkin (1944: 117) reports a similar belief, locating the waterhole near Laverton in the Eastern Goldfields of Western Australia. This hole was guarded by the Rainbow Serpent *Tarpidi*. It is interesting to note, however, that from the Ooldea perspective, the great snake *Wonambi*, guardian of all "doctors", is associated with the waterhole *Tjabudi*, located south-west of Ooldea. It is at this location that the rituals and revelations associated with the making of "doctors" occur (Elkin 1944: 112). As both Harvey Johnson (1941: 41) and Berndt and Berndt (1945: 135) note, at Ooldea small pearl shells are known by the name of *kapi* or *ga:bi*; that is, water!

Pearl shell is "water"; its flashing the lightning that precedes the summer storms. Irrespective of the uses to which shell was put, it was regarded as an emblem of *life* in its own right. Water, rain, lightning; factors in the seasonal re-awakening of the land after long dry periods, are all embodied in the shell.

An important quality inherent in pearl shell is its shimmering iridescence. Morphy (1989), discussing the concept of *biryrm* (glossed as "brilliance" or "shimmering") among the Yolngu of north-east Arnhem Land, stresses the cultural importance of this quality in ritual and art in that region. People and presumably objects can be transformed into representations of *Wangarr* (ancestral beings and objects) by making them shine. People and objects shine after being oiled and ochred and painted with relevant designs. Shimmering and brilliance are, for the Yolngu, "associated with ancestral power and that intense sensations of light are felt as manifestations of that power" (Morphy 1989: 39). Cross-hatching with fine white ochres is one means by which a shimmering effect is achieved by the Yolngu in their painted art.

Dussart (1988: 37) makes an important point regarding the quality of "shininess" (which I equate with brilliance) among the Warlpiri in central Australia. For the Warlpiri, this quality is considered a sign of health, well being and beauty. "Brilliance" recalls the inherent traits emanating from Ancestral Beings when they first emerged from their places of origin. In this context (north-eastern Arnhem Land, central Australia), the significance of Bardi plain pearl shell pubic pendants becomes more apparent. According to Elkin (1936: 204-205), a plain shell is the emblem of a fully-initiated male, and the engraved shell, which must bear the "key" pattern of the Karajarri rather than Bardi engraving, is representative of an earlier phase in the initiatory sequence. Worms (1950: 656), however, writes that engraved shells are the emblems of a senior man, with younger men wearing

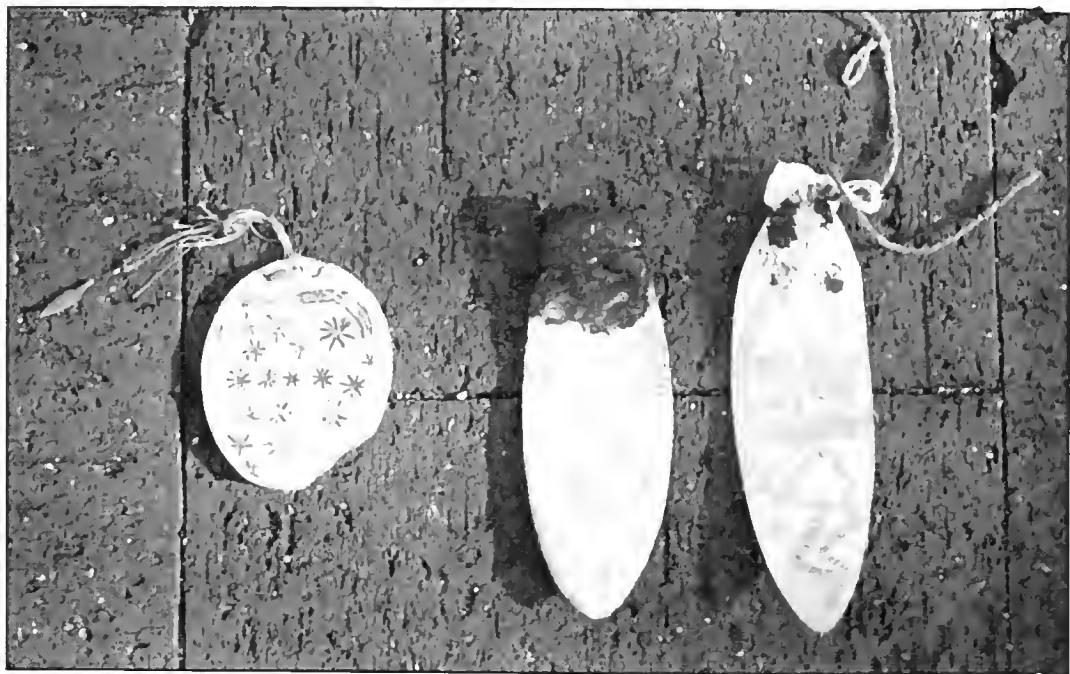


Plate 14. Small decorated blades and discs of pearl shell worn as decoration. Unprovenanced,



Plate 15. Young men decorated for public ceremony wear engraved shells suspended from hair string belts, Jigalong, W.A.



Plate 16. In this early photograph taken at Coolgardie, WA, two men wear disks of pearl shell on their chests.

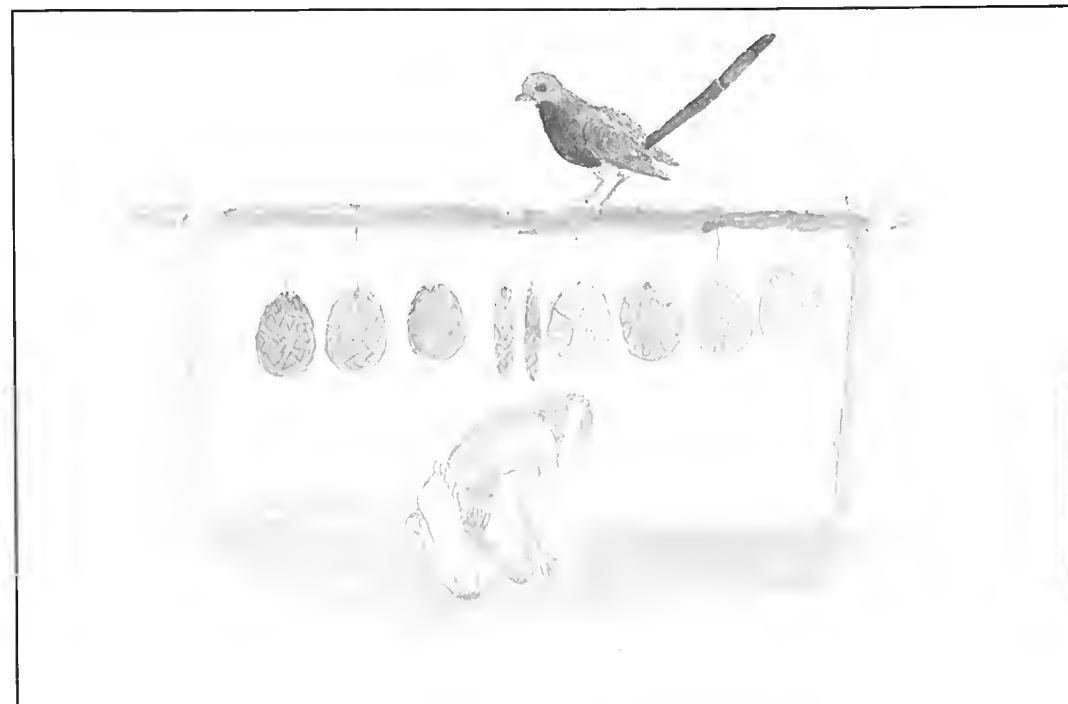


Plate 17. Rainmaker, with carved pearl shell suspended in the sun, tries to attract rain bearing clouds. The wren was a gifted rainmaker in the dreaming. Pencil and water color by Butcher Joe Nangan. Broome, WA.

only plain shells, a situation that continues today (O'Donovan 1990: 16-17). A restructuring of the significance of plain and engraved shell appears to have occurred between 1936 when Elkin was in the field, and 1949 when Worms collected his data. Today the engraved shells worn by the Bardi are invariably of local origin and bear designs of the bilaterally symmetrical style. Unfortunately, there has been little investigation of these concepts of brilliance elsewhere in Aboriginal Australia, although there appears to be some evidence in many places to suggest that the quality of "shininess" underlies a wide range of concepts dealing with physical and spiritual well-being, and that these are believed to flow from the Ancestral Creation Period.

Quartz crystals, cleavage fragments of gypsum and calcite, and pearl shell are all natural substances that possess this quality and are believed to incorporate these underpinning concepts. All are substances used in a wide range of religious practices. Similarly, pigments derived from the gleaming white mineral huntite, or red ochre from the mines of Wilgie Mia in Western Australia and Parachilna in South Australia, possess that extra quality of "shininess" and were more highly prized than duller hued pigments of the same colour. According to Petri (1938-40: 236), the Bardi perceive the Rainbow Serpent *ahungun* to be the creator of pearl shell, which it expels from its submarine cavern during the equinoctial or king tides. Petri (1938: 236) stresses the nature of *ahungun* and its relationship to water on translation as "iridescent it rises from the sea as a rainbow; ascends into the sky and drinks to end the rains".

Pearl shell, plentiful at its source, durable, portable and shiny is filled with further symbolic power relating to well-being, beauty and harmony as well as being linked directly to Rainbow Serpents, water in its various forms, and lightning.

PERSONAL ADORNMENT

Perhaps the most common use of pearl shell (apart from its role in rituals and economic exchange) is for personal adornment. Love (1917: 27-9) describes the Worora of the west Kimberley wearing large shells attached to hair belts, smaller shell blades hanging from neck cords between the shoulders, and other small pieces were tucked in headbands to lie over the forehead. Worora pearl shells were frequently plain, but they could be ornamented with a few rough scratchings representing the body scars common to the people of that area or sometimes outlines of fish. In a later publication, Love (1936: Plate facing p. 116) included a photograph of a child wearing an unornamented shell suspended from a spun fur belt. A photograph taken by Walter (1982: 71) on the Dampierland Peninsula (possibly at Beagle Bay Mission) shows five small boys holding boomerangs and wearing pearl shells, three of which are obviously engraved.

Throughout the Kimberley and desert areas of Western Australia, men and women wore small blades, discs and crescents of pearl shell for personal adornment (Plate 14). The wearing of smaller pieces of shell is considered to be informal, and the larger, more cumbersome shells are usually associated with formal events. According to Mary Durack (pers. comm.), bracelets and necklaces incorporating many small pendants of shell were believed by the Nyul Nyul of the Dampierland Peninsula to have originated with the *Guridid*, a mythical race of small "pre-Aboriginal" people. Regardless of size and use in personal adornment, however, pearl shell always possessed that extra "life giving" element that enhanced its character or beauty.

As noted earlier, pearl shell served as important emblems of the various phases of Bardi and Nyulnyul initiations (Elkin 1936: 190-208). Piddington (1932b: 80) records a similar situation for the Karadjari of the Eighty Mile Beach. In other areas of the north-west and in the Western Desert, shells were presented to young initiates as emblems signifying completion of their formal initiation and their entry into adulthood and marriage (Plate 15).

The Garawa and Wanyi people wear *jaramara* shells as emblems of particular formal social status (Trigger 1987: 76). For example, a betrothed couple each wear shells for a period before formalizing their marriage. In some cases as noted earlier, larger plaques of shell were worn about the neck in both secular and ritual situations (Plate 16). Women may also wear such shells in formal situations. Larger shells, both pierced and unpierced, may be bound to other objects to form complex composite artefacts for specific rituals (Berndt *et al.* 1982: 112).

RAIN MAKING

Being associated with water, pearl shell is inextricably bound to the Rainbow Snake, and through its manifestation as a rainbow, is linked to rain. The nacreous shell, with its subtle play of colours, is the essence of life-giving water and a vital medium of power. Such power may be used, not only to create rain, but also be harnessed for other supernatural activities. Strehlow (1947: 134-135) recorded that two *tjurunga* associated with the totemic rain centre of *Lalkara* near Horseshoe Bend in central Australia were sea shells. Unfortunately, he gave no detailed description of the objects and while it is likely that they were pearl shell, this cannot be definitely established.

Large shells may be placed in pools or containers filled with water to attract rain. Such an event was noted in the Victoria River District in 1982, when a prominent leader at the Lingarra community was reported to have placed a pearl shell in a pool on the upper Victoria River to create seasonally unprecedented rainfall. The Nyikina of the Fitzroy River basin suspend pearl shell by hair belts or cords from a frame. It is believed that the shells, flashing lightning as they rotate in the breeze, attract rain-bearing clouds (Plate 17). The Kukaja at Balgo Hills and other Western Desert people employ hooked blades of pearl shell attached to lengths of hair-string to "pull in" rain-bearing clouds. These blades are associated with the Rainbow Serpent, *Kutal*, and are called *wilany* after the crescent-shaped rain clouds they are employed to attract.

Further south and east, pearl shell was used in a variety of ways to make rain. These methods usually involved the scraping or grinding of the shell, thus releasing particles of its essence, and mixing the resultant powder with other substances such as spittle or water, whilst singing appropriate chants (R. and C. Berndt 1945: 134; Mountford 1976: 275-278). Such practitioners rapidly reduce the size of the shell and may explain the presence of small, highly treasured fragments of shell which are to be found in peripheral areas of pearl-shell distribution (Plate 18). Tonkinson (1974: 89-93) discusses the important *Nga:wajil* rain-making rituals performed at Jigalong that originated in the Great Sandy Desert of Western Australia. Pearl shell, along with other objects and materials, plays an important role both in the construction of composite ritual objects and as an item of ritual apparel in the *Nga:wajil* rituals.

MAGIC AND SORCERY

Blades of shell, known widely as *piutjapinja* or *piutjawintja*, are relatively common objects throughout much of Western Australia. Used as pendants, forehead and temple adornments, or suspended in bunches from hair belts, they add a spectacular touch to formal occasions. They also possess "power" and may be kept for use in both positive and negative sorcery. Spencer and Gillen (1899: 545) describe the use of undecorated *longka-longka* pearl shell in love magic rituals by the Aranda and other central Australian Aboriginal groups. Tindale (1987: 55) noted that the Kurrama of the Hamersley Ranges in the Pilbara received necklets of fur strung with pieces of pearl shell attached by resin obtained from the spinifex grass. These were said to have originated from the Ngaluma of the Nickol Bay area. If this is true, it is likely that they would have been fashioned from *Pinctada albina albina*. Small discs known as *kiuara* are associated with the moon and are used in conjunction with propeller-type bullroarers for love magic in the Western Desert (Berndt 1959; Akerman and Bindon 1986). Such pieces are also said to bring luck in card games, particularly when incised with card suite symbols.

Rationale for the association of the moon with love magic, especially if the desired person belongs to an inappropriate social category, can be found in a widespread Kimberley myth in which the Moon seduces his mother-in-law. Notwithstanding that the Moon is punished for this breach of conduct, the initial seduction is seen to provide a mythic precedent and, as Kaberry (1937: 456) states, "pervert(s) what should serve as a warning to tribal infringement into a sanction for their own behaviour".

Pearl shell may also be used for sorcery purposes. Small shell blades, collected between 1948 and 1954 by B. Coaldrake at the old Forrest River Mission, now Oomboolgarri, in the east Kimberley, were said to be used by a cuckolded husband seeking revenge on an errant spouse. The blades were embedded upright on the spot where the woman had urinated, causing her to become ill and



Plate 18. Even minute pieces of pearl shell are regarded as important sources of power for many Aboriginal healers. Ooldea, SA.

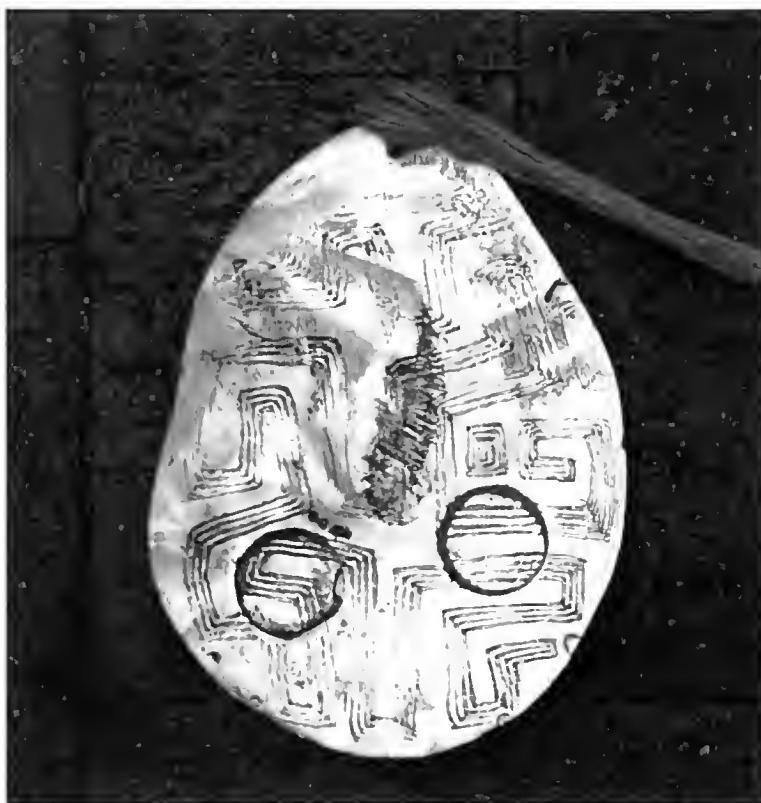


Plate 19. The discoidal depressions on this shell indicate that it originated from a cultured pearl farm. Witjuna, WA.

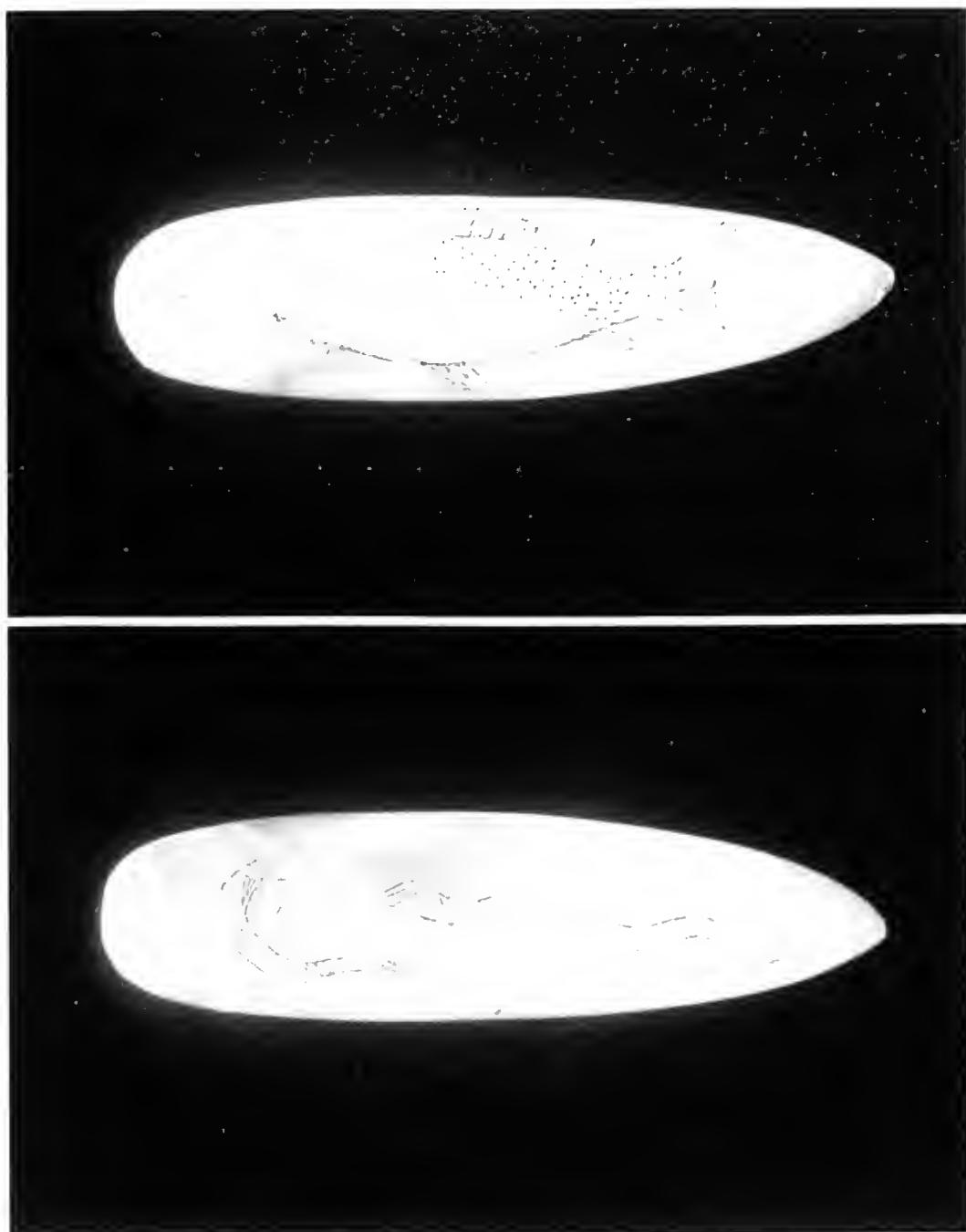


Plate 20. Two sides of a small decorated blade of shell from Cape Leveque, W.A.

consequently a burden on her lover. These blades are now in the National Museum of Australia. At Yuendumu the Warlpiri are said to have used pearl shell blades, hafted with resin to a length of human hair string, for projection sorcery (Cawte 1974: 49). In western Queensland, Roth (1897: 159) reported that small, resin-hafted pearl shell pieces, attached to hair string, were regarded as powerful sorcery objects. These shells were said to be superseding the indigenous *mungunji* pointing bones in importance as far east as the Cloncurry district. Shells originating from cultured pearl farms possess sharp-edged discoidal depressions indicating that cultured half-pears had been removed. These shells are sometimes called *motaka* or *turaak* and are said to be used in sorcery designed to cause vehicle accidents. The discoidal areas represent dazzling headlights, or speeding wheels. Although engraved shells bearing these pearl farm indicators have been seen at Wiluna, they are normally plain (Plate 19).

Small pieces of pearl shell, occasionally less than 10 mm in length, were also part of a doctor's equipment. These were known as *tjakolo* and *mapan*, in the Kimberleys and Western Desert respectively. Small blades bound to the temples by a head band, and larger blades fixed to long ropes of hair string were used to evoke dream-spirit travelling. Spence and Gillen (1899: 545) state in a footnote that, "The *longka-longka* is also used as charm in connection with sickness of any kind. Laid on a chest of a man it is supposed to have great curative properties." Clement (1903: 7-8) notes that an oval blade of shell, suspended by hair string cords about the neck, is the emblem of a "doctor" in north-western Australia.

Men, and in some areas women too, received these pieces during their initiation into the higher magico-religious crafts. According to Berndt and Berndt (1945: 60) small pieces of shell are inserted into the limb joints, ears, forehead, neck and at the points of articulation of the lower jaw of the postulant by a senior "kinkin" or doctor in the Ooldea region. In the northern and eastern Kimberley, postulants are said to receive instruction and power via the spirits of the dead, usually in conjunction with visitations of the Rainbow Serpent. The spirits are said to give, or insert into, the postulants, small blades of shell and other magical substances. The Dampierland people believe that these "doctors" house these shells within their bodies from birth (Plate 20).

In the eastern Kimberley, women "doctors" possess the power to cure illness and to visit the spirits of the dead to obtain magical powers. They are unable, however, to use these powers to divine or act against other sorcerers; dealing with other sorcerers is the prerogative of male "doctors" (Elkin, 1944: 138-143 citing Kaberry).

Some pearl shells have been described to me as *jalaljalal* or "witness" shells by Wunambal informants in the northern Kimberley. These are passed among groups of adults during inquest rituals for a deceased person (Plate 21). The individual "guilty" of ensorcelling the victim will reveal him or herself, by an unwillingness or inability to handle the shell. The shell itself is believed to have the power to destroy the guilty person. Blundell (1975: 442) notes that among the Worora, a shell could be used when passing judgement on an offender against the socio-religious laws of the group. Men who gathered to adjudicate over the fate of an offender circulated a pearl-shell among those assembled. If all of them were prepared to touch the shell no further action would be taken against the condemned and his life would be spared.

O'Donovan (1990: 15) refers to two procedures by which pearl shell may be used against those who transgress Bardi Law. The first method involves sending a paperbark wrapped shell "...along the track of a wanted person ... It would catch up with him somewhere, sometime, and would bring its retribution - misfortune or death". Another method, which according to O'Donovan is still practised, requires scraping a pearl shell and blowing the powder produced in the direction of the place where the fugitive is known to be.

A particular use of pearl shell, that is rarely commented upon, is its use for spearheads and other implements. Spence (1928: Plate 378) illustrates a Kimberley bark wallet containing spearheads and preforms, one of which is fashioned from pearl shell, but this may be a unique example. Small pearl shells and broken fragments with suitable sharp edges were used as knives along the Kimberley coast. According to Elkin (1936: 193-194) shell blades were used by the Bardi people of the Dampierland Peninsula to separate the gum from the teeth during tooth avulsion. Piddington (1932b: 54) refers to the myth of *Mirin*, a culture hero who originated at Broome and instituted the northern Karadjeri tradition of circumcision using a pearl shell blade. In the early 1930s, according to Piddington

(1932b: 76), the Karadjeri, following the northern tradition, continued to use either a piece of pearl shell or cockle shell rather than a stone blade to perform circumcisions.

It has already been noted that pearl shell plays an important role in ritualised socio-economic exchanges. Exchange systems are aligned along both individual and corporate lines. Both systems may operate within a family, a local group, a dialectal unit or between separate language groups. At the individual level the focus of exchange is an individual and his or her partner on either side with whom they exchange goods. Depending on the position of an individual within this type of system, partners may be immediate kin, parents or siblings, or closely related affinal and classificatory kin in adjacent groups. Exchanges of this nature such as the *merbok* of the Daly River area described by Stanner (1933: 156-175), the *yiji* of the Walmajari and Kukaja of the south-east Kimberley, and the *winan/wunan* exchanges of the north and central Kimberley, reinforce bonds between individuals and occur with a minimum of ceremony. Goods received via these linear forms of exchange may be utilized by any member of the system to fulfil other individual exchange obligations, provided that they are replaced with goods of equivalent value with a minimum of delay.

Goods diverted from a system such as the *merbok* to fulfil *kue* (the corporate ceremonial exchange of goods between a man and his kin and his prospective wife and her kin) obligations, may then be introduced into another separate *merbok* line operated by the affines. Kaberry (1939: 131) reported how shells are included among the gifts given by a man and his kin to prospective in-laws. These gifts seal and formalize the prospective union and "distinguish it from a casual liaison, give the man the right to take his wife away to his horde country, and to claim any children that are born as his own". Gifts, carried by the bride, go initially to her parents and together with presents of meat, are made for the duration of the marriage.

Networks of ceremonial exchange were inextricably bound into the whole framework of both intra- and extra-group social interaction. Eastern Kimberley mythology specified that the exchange patterns were laid down by mythic beings who exchanged goods and/or services in return for shell (Kaberry 1939: 172). A myth shared by the Walmadjari and Ngadi in the south-eastern Kimberley tells of the stealing of pearl shell by a bilby (*Macrotis lagotis*) from the west, who had seen other mythic beings illegally incise designs on them. Pursued by Rain and Lightning beings, the bilby flees to Broome and deposits the shells back in the sea. The point of deposition is regarded by the Ngadi as an increase site for pearl shell. McConvell (no date: 9) records a version of this myth in which a rat-kangaroo steals a pearl shell from rain beings at Kamira near Tanami. The rat-kangaroo is pursued in a north-westerly direction by various water-related beings.

Trading partners within these networks included both men and women. Such goods were of a secular nature and did not include secret-sacred objects. Sacred objects, songs and more esoteric items moved within a separate exchange system. In the northern Kimberley, shell was passed both between members of the same lineage and between lineages. Gould (1980: 155-6) states that in the Western Desert, exchanges occurred between patrilineages that he termed "totemic cult lodges", rather than between members of the same patrilineage. This situation is found also among the desert-orientated communities of the southern Kimberley.

Corporate exchange of large quantities of goods is a less tightly structured exchange system. Love (1936: 191-3) describes such an exchange between two language groups of West Kimberley Aborigines at Kunniunya, in the following way:

"If the *neria* is summoning the local men to a ceremonial gathering, all will discuss it for some days and plan as to when they shall all start for the meeting place. If it is to announce the approach of a visiting body, preparations are made to receive the visitors fittingly.

The women of the local camps will have the special duty of collecting a store of honey for the visitors. They will go out each day and store up, in bark baskets, gallons of this delectable food, hanging their bark buckets, filled with wild honey, in trees till the day of the arrival of the visitors.

The men will go through their supplies of spears, fur and hair-string belts, forehead bands, spear-throwers, tomahawks, pearl-shell ornaments, and, nowadays, tobacco and flour too, if any of the men has been lucky enough to get a dingo scalp, or a hawksbill turtle, lately.

When the day of the important visit actually arrives, all the local men are ready, on the meeting ground, at about sunset. As the sun sinks, the visitors will appear, coming from the watercourse



Plate 21. A *jalaljalal* shell used to divine the identity of murderers and people guilty of breaches of the law, Wyndham, WA.

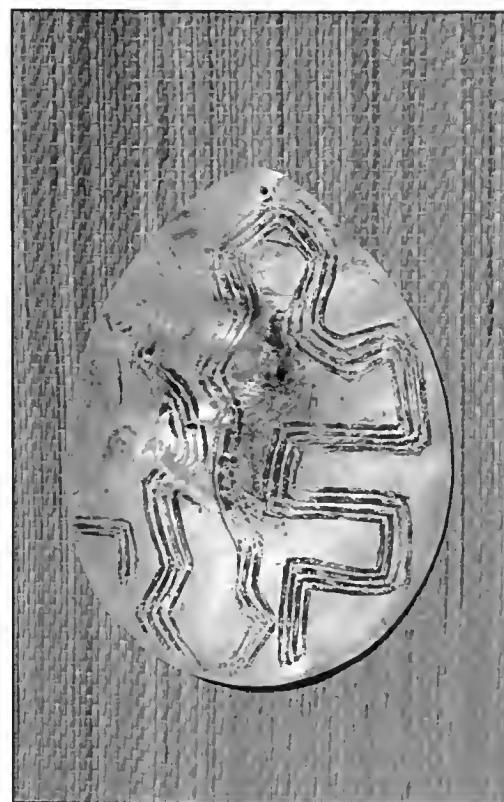


Plate 22. A random or haphazardly organized zigzag design. Sturt Creek, WA.

where they have been waiting through the day. At first will be seen the tips of waving spears advancing, then the men carrying the spears aloft, till, when close to the local meeting ground, the visitors will break into a high-stepping trot, with a stamping on the ground and a rattling of spears, that thrill the beholder.

They will rush towards the waiting local men, who receive them with a feint of hostility, then hosts and visitors settle down to the customary exchange of gifts. The visitors bring forward, and lay on the ground in front of themselves, towards their hosts, what they propose to give: spears, spear-throwers, belts, head-bands, hair ornaments, all in a growing heap, that is watched by the local men with interest. When the piling up of the heap of the gifts of the visitors ceases, the local men take their turn and pile in front of their visitors what they propose to give in return. Man after man comes forward, to lay on the ground a spear, or other weapon, an ornament, or other gift. The Mission men, being the plutocrats of the aboriginal world, having tobacco and flour which they have got as rations for work done, or bought with their scalps or turtle shell, may place on the heap a part of a bag of flour, or several sticks of tobacco. Kululauera, the humorist, raised yells of laughter at one such gathering bringing up, with a great show of generosity, a handful of spears, then wheeling round and taking them all back with him again, leading the laugh that followed.

When the piling up of gifts is done, they are shared by the simple process of one man after another taking something that he fancies from the heap. Here is evidenced one of the most attractive traits of the Worora character. The men will take a share of the goods that are piled up, without any grabbing or scrambling for a pick.

But it is not to be supposed that no jealousy is felt over the giving or receiving of gifts. On the same occasion when Kululauera raised a laugh by pretending to be much more generous than he had any real intention of being, the sharing of gifts was concluded in peace, then, almost at once, the air was filled with shouts, the clashing of spear shafts together, the beating of clubs on shields, soon followed by spears flying through the air. On my intervening to ask why this angry demonstration so soon followed such a demonstration of goodwill as we had witnessed, I was told that the visitors were not satisfied with the gifts given them in return for what they claimed, perfectly truly, was the much bigger heap of gifts laid by them on the ground. After some reexamination, the anger subsided, and the visiting party of men broke up into groups, each small group going off to the camp of their appropriate relatives. At about this time the women of the visitors, who had up till now been waiting over at the creek till the formalities were completed, came up, each bowed under a huge load of spare spears, bamboos for making spears, big bark carry-alls filled with food of various sorts, and bringing along with them (even carrying some) the dogs.

After the dispersal of the groups, the women of the local men, who had been storing up honey, produced their bark buckets and gave what they had stored up to their own special relatives, notably their "rambadba" opposites. The two parties, visitors and hosts, now settled down to a meal and exchange of gossip.

Men who had not seen each other for a long time sat side by side with their arms round each other's shoulders, and howled together. Groups of women, who had not met for perhaps a year, crowded together, and howled in what might be supposed to be great sorrow; but is really the expression of the joy they feel in seeing each other again."

The "neria" is an emblem sent with a messenger to validate instructions that are conveyed verbally. It may consist of a marked piece of wood, feather plumes or a pearl shell ornament. Love's description of the exchange provides some idea, not only of the goods exchanged but also the tensions that accompany such large scale meetings. The role of honey as a "special" food is also obvious (see Akerman 1979c: 169-178). Kaberry (1939: 169) in a footnote, points out that in the eastern Kimberley region of Western Australia, honey received in exchange for pearl shell cannot be eaten by pregnant women or by women with young children. The association of the shell with the Rainbow Serpent, *Galeru*, imbues the honey with qualities that make it potentially harmful to small children and expectant mothers.

Goods of a secular nature could be diverted from exchange systems for personal use, provided that other goods of equivalent value or status replaced them. Berndt and Berndt (1945: 166, 169) observed

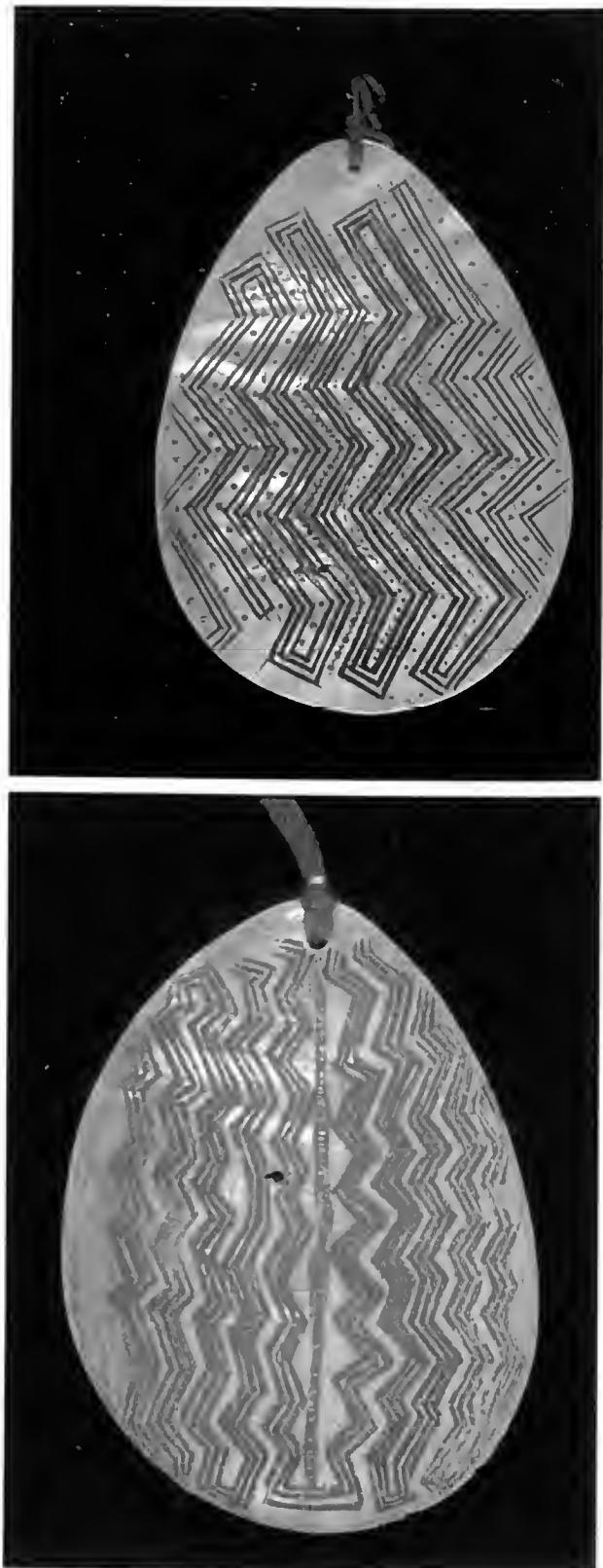


Plate 23. Organized zigzag motif: **a**, showing regular alignment of adjacent elements and angles in a vertical orientation. Broome, WA; **b**, the vertical zigzags are organized on either side of a central axis. Sturt Creek, WA.

Kimberley pearl shell



Plate 24. A broad shell blade with a lattice design scratched on one surface. Fork Creek, WA.



Plate 25. A young man wears the public emblem of an initiate, a wooden hairpin incised with an interlocking key design. Jigalong, WA.

at Ooldea in 1941 that, during periods of gambling, large numbers of pearl shell as well as other items of material culture such as weapons and clothing would change hands. A gambler who lost his own "stakes" might borrow from another person on the understanding that the loan would be returned or replaced with like goods. Pearl shells were valued highly at Ooldea, and Berndt and Berndt (1945: 169) record a shell being exchanged for a bundle of good spears, a hairbelt or some other valued object. A large plain shell was offered to the Berndts for ten plugs of tobacco with a value of ten shillings or \$1, which indexed to current monetary value is approximately \$50.

According to Falkenberg (1962: 148), a shell had the equivalent value of an iron spear head on an index of values that he constructed for the Port Keats area. Blankets were valued at between two and four spear heads, according to the season. A five kilo mass of ochre was equivalent to five spear heads, which suggests that for all its intrinsic worth, shell in this area was not regarded as highly as more utilitarian goods (1962: 148). My own information suggests that pearl shell was used only by "specialists" in specific contexts, although it was handled by all persons on a particular exchange line.

Kaberry (1939: 168-9) observed women in the eastern Kimberley receiving pearl shell and other goods from trading partners, initially reciprocating with food stuffs, particularly honey. In this area a woman would be more likely to pass shell directly to her partner, whereas a male may remove it from the system for personal use, or bestow it on an initiate for whom he was responsible. If a trading partner did not possess shell, or was tardy in providing the necessary reciprocation gifts of food, they were bypassed in the exchange and the shells passed directly to the next partner in the system. Shells for which no compensatory gift was received could be retrieved and redirected by the original transmitter.

Kaberry (1939: 248) records the case of a woman who suffered acute pains after dreaming of shell. These pains and the dream were thought to be linked to a trading partner who was impatient to receive shell from her. Word was sent to the partner from whom she received shell to forward them so she could then appease the impatient partner. Exchange strategies limited time of possession of an object to a month or less, except where an individual had accumulated a surplus of shell, in which case some may be retained indefinitely. Stocks of shell accumulated when an individual received exchange goods from a number of partners, on disparate routes, simultaneously.

An indication of the value that pearl shells possessed in the eastern Kimberley is found in the following transactions observed by Kaberry in 1935 (1939: 171):

- a) one shell exchanged for two Northern Territory shovel spears, three boomerangs, one dilly bag;
- b) one shell and three smaller pendants exchanged for two red cloth pieces, five Kimberley shovel spears, one Northern Territory shovel spear;
- c) one shell exchanged for three Northern Territory spears;
- d) one large engraved shell exchanged for five dilly bags, three masses of red ochre, five Northern Territory spears;
- e) one shell and one dress exchanged for the rights to one women's ceremony.

It can be seen then that there was no single economic structure by which goods were moved across the country. Rather, a number of lineal systems existed based on established networks of individuals along which goods moved and across which they could be transferred via the medium of other more locally specific, socio-economic exchanges.

Pearl shell derived from the Kimberley, then, plays an important role in Aboriginal life where ever it occurs. As an emblem of power as well as for its own inherent beauty, it is shaped into highly prized ornaments. It continues to play a vital role in rain-making rituals and is a necessary accoutrement of the people who seek, via rituals, to manipulate the cosmos. Shells also are an important element in the socio-economic exchange systems which continue to operate today in the Kimberley, the Western Desert and adjacent areas of the Northern Territory.

THE ART OF ENGRAVED AND INCISED PEARL SHELL

The motifs engraved or incised on pearl shell have been discussed at some length by Davidson (1937, 1949) and Mountford and Harvey (1938). Davidson focused primarily on the motif he initially termed the "angular meander" and then later called the "interlocking key". In his 1937 monograph on Aboriginal decorative art, he concluded that this particular design had an indigenous origin - a stance he altered in his 1949 paper on the subject, attributing a south-east Asian origin to the design. Without sound archaeological evidence it is impossible to ascertain the place of origin. I believe that there is as much evidence for this design being indigenous as there is to the contrary. The interlocking key motif is discussed below.

Examination of the literature and pearl shell in private and public collections suggests that initially there was a diffuse area that ran along the Eighty Mile Beach area and as far north as the Dampierland Peninsula, in which shells were engraved with zigzag and random maze motifs. By 1920, centres at either end of this area had developed their own characteristic styles, based on the true interlocking key motif in the south, and the linear geometric motif in the north. It appears that a sequential development of motifs occurred and that at least one particular motif was an amalgam of the styles of these two areas. In recent times, pearl shell is often prepared and engraved in areas far removed from the source of the shell itself.

Mountford and Harvey (1938: 131-3) divided engraved pearl shell into two categories - geometric and figurative. The former category was further subdivided into the angular meander or maze (the interlocking key); meander and zigzag; lattice and ladder; and stars and parallel lines. The figurative category was undifferentiated. Stanton (1981) further developed this typological framework and introduced the category of geometric linear style.

I have followed this nomenclature in general, but modify the geometric sub-categories and I have subdivided the figurative style. I also suggest that the "geometric linear" style is better termed the "bilaterally symmetrical". A category dealing with minimally marked shell has also been added.

GEOMETRIC DESIGNS

Geometric designs are composed of linear elements, organised to varying degrees of complexity to fill the surface of the shell. Usually, each linear element is based on three engraved parallel lines that, when filled with ochre, emphasise the two intervening ridges. The linear elements themselves are separated from each other by areas of unengraved shell that, in order to avoid confusion or cluttering of the whole design, are wider than the ridges left between each set of three engraved lines. Some linear elements, however, are based on only two engraved lines and some shells bear designs in which the lines are not grouped into composite linear units at all.

Geometric design sub-categories.

i) Zigzag, random meander and mazes.

Brandenstein (1972: 223-238) demonstrated the association of the zigzag (as it is applied to wooden implements in the Pilbara) with water, the motif itself being a schematic representation of water. In the Western Desert, single zigzags are equated with lightning and, when in multiple series, with water.

Brandenstein (1972: 235) also considered that three types of human/water association could be discerned. I have revised his order of presentation to emphasise the inherent concept of "water", with all its ramifications pertaining to pearl shell.



Plate 26. Two shells engraved with the linear form of the bilaterally symmetrical style: **a**, Broome, WA; **b**, Moolabulla, WA.

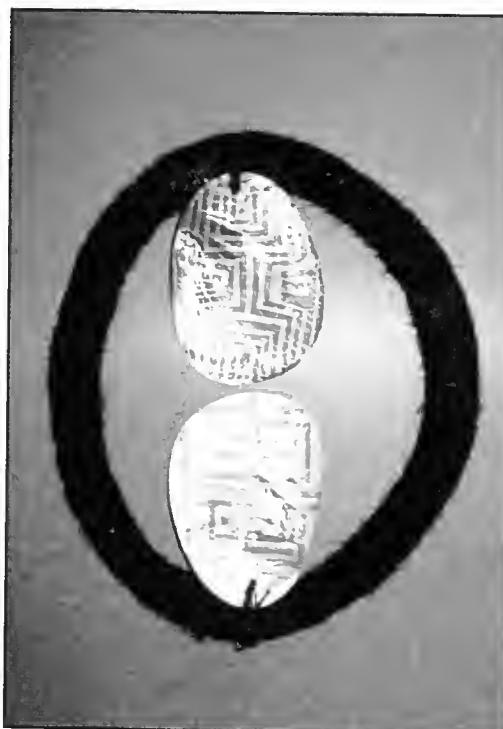


Plate 27. Two shells, both engraved with the broad hachured band variation of the bilaterally symmetrical style, suspended from a hair belt. Cape Leveque, WA.



Plate 28. Interlocking key forming an anthropomorphic motif, constructed about a central rhomboidal area infilled with vertical lines. Derby, WA.

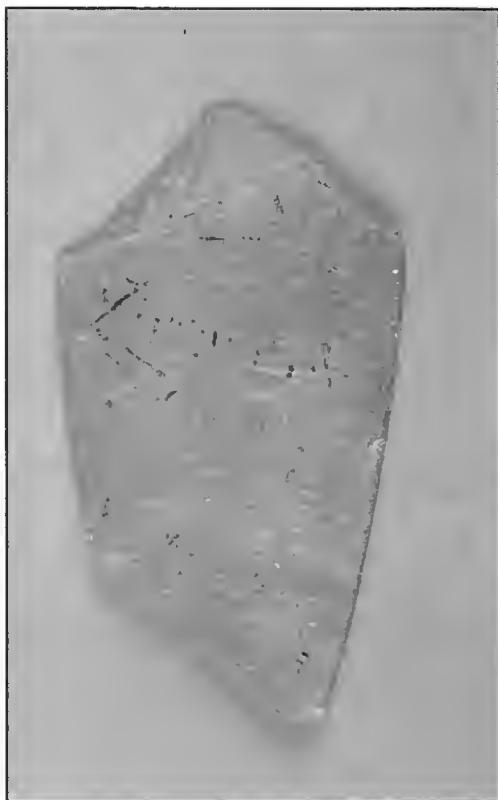


Plate 29. The ladder motif engraved on a fragment of a pearl shell blade. Broome, WA.



Plate 30. This shell with a haphazard meander and other geometric elements also has a carefully executed stellate figure engraved on it. Kimberley, WA.

- a) The association that "seems to exist in the sphere of magic between the primeval force 'water', as the abode of the unborn and the retreat of the departed souls in the belief of the Aborigines, and weapons as instruments of inducing or preventing sudden death." It appears that von Brandenstein missed the all important association of water as "life"; a concept as magical and as spiritual as either a pre- or post-earthly existence.
- b) A second association exists between water and tribe or tribal alliance, through the need for all persons to maintain access to drinking water. In the riverine areas of Western Australia Aboriginal groups share rivers or creeks. In the desert areas of the interior, a soak or waterhole is shared and becomes the subject of common symbol. In either context, water is the most important element for the maintenance of human life and the proper functioning of human society in this arid continent. Brandenstein (1972: 236) generalised the degree to which water resources are shared. My own experience is that such sharing takes place along the borders with adjacent groups, and not in the "core" areas of a local group.
- c) Brandenstein's (1972: 235) third association was made between the mythological significance of specific waters and sources of raw materials, particularly wood, located adjacent to them. These associations may occur at the other types of sites. Mythological rationale pertaining to a particular site imbues the adjacent raw materials with superior esoteric qualities not found in raw materials derived from the general environment.

Water, its creation and control, with its varied manifestations (rain, dew, hail, ice, flood etc.) and its associations with supernatural beings and the forces of life and death, is a profoundly important element in Australian Aboriginal cosmology. The multiple zigzag as a water symbol is a logical motif to be applied to pearl shell, since this is the tangible substance that represents water in varied manifestations.

It is possible that the zigzag in the form of a haphazard meander or maze was the first organised motif to be engraved on shell (Plate 22). From the random meander or maze, the zigzag became aligned in multiple series either horizontally or vertically, across the shell to create a herring-bone effect. In some cases the herring-bone may be formed of a single series of zigzags, that proceeds backwards and forwards across a shell, and fills it in an unbroken sequence. In some shells the apical angles of the zigzag may become rounded, or even rectangular. Since the late 1970s the zigzag motif has been applied as a band of closed concentric elements that follows the perimeter of the pearl shell. The number of engraved elements present may vary but the central area is always left open. This type of design seems to have originated in the Fitzroy Crossing area.

According to Paddy Roe, a senior custodian of ritual activity in the Broome area, the linear rectangular pattern derived from the zigzag is known as *ranya-ranya*. It represents, among coastal groups in the area, the ripples left in the sand by the receding tide. In most cases, aligned multiple zigzags have been described by Aboriginal people as either flood water, or ripples caused by the wind on the surface of flood water (Plate 23a,b). Meanders and mazes are often interpreted as specific named creeks and rivers, although Petri (1938-40: 236) suggests that random meanders may be a schematized representation of the Rainbow Serpent itself.

The lattice motif (Mountford and Harvey 1938: 131) is usually found only on shell blades and is incised rather than engraved. The design consists of two opposing sets of zigzags that intersect on the vertical axis of the blade (Plate 24). It is possible that the concentric rhomb or diamond motif, common on wooden artefacts in Western Australia, is derived from the lattice design.

ii) The interlocking key.

The concept of the interlocking key in Aboriginal art has created some confusion. Davidson (1949: 86) noted that a true key pattern seemed to be absent. In my experience, however, it occurs on wooden objects in the Western Desert, in the southern Kimberley and in the northern Pilbara, particularly on the public ritual emblem, the *larra* or hair pin (Plate 25). In these instances the key pattern is used as a ground space design, that is always found in conjunction with a herring-bone infiller.

What is generally termed the "interlocking key" in relation to shell art has developed from zigzag, mazes or meanders "that as they infill the ground space, unavoidably simulate the interlocking key element as they terminate" (Davidson 1949: 86). The style, known as geometric linear (Stanton 1981: 99-106) may, however, be considered as a broad-spaced interlocking key which is mirror-imaged about the vertical axis, and consequently possesses bilateral symmetry. I propose that this class be

renamed the bilaterally symmetrical style. The design appears to have been derived from an anthropomorphic figure and in some cases is identified as an image of a mythic being (Worms 1986: 29, Berndt and Stanton 1980: 16). There are indications that some contemporary Bardi and Nyul Nyul people at least regard the design as being "the tree of life" (O'Donovan, pers. comm.). This tree is presumably the species of eucalypt from which are fashioned the sacred objects of the area. This style is regarded as a northern Dampierland motif. Two variants of this style occur. In one, the pattern is constructed using two or three parallel lines, the engraving of which is executed in a traditional manner (Plate 26a,b). In the second, the design outline is applied in a broad band and carefully incised into the shell with a fine metal tool. Once the outline has been incised into the shell it is completely filled in with fine hatching (Plate 27). This variation is believed to be a more recent development, occurring only on shells collected after the 1930s. The fine incised lines, of both outline and hatching, can be effected far more rapidly and with less effort than the deeper and broader engraving techniques required to produce the traditional variation of this style.

Some interlocking key designs are seen by Basedow (1925: 355) as schematized anthropomorphic figures. Mountford and Harvey (1938: Fig. 2b) illustrate a shell which could have a similar interpretation. Davidson (1937: Figs 44b,c) illustrates two shell blades with schematized anthropomorphic figures.

Schuster (1951: 219) suggested that similarities exist between the designs on some Aboriginal pearl shells (specifically the shell depicted in Davidson 1937: Fig. 44c) and anthropomorphic designs from the Indonesian Archipelago. Cross-hatching as an infilling medium, and the design form, were claimed by Schuster to be indicative of Asian influence. It is equally possible, however, that the cross-hatching technique of infilling space was adopted from non-Asian seamen, whalers and pearlyers, or sailors who indulged in scrimshaw work in ivory, shell, horn or bone. Whalers appeared on the Western Australian coast some decades before the pearl industry developed. Unfortunately, little is known about the interaction between whalers and Aborigines in the area.

It was noted earlier that Davidson concluded that the interlocking key was a non-indigenous art form (1949: 98). While this possibility cannot be dismissed, I consider that the more complex maze and key forms on shell could have developed within Australia. The combination of the true key or geometric linear as a design space boundary, and the herring-bone as a space infilling technique produce strikingly complex and well organised designs. The key designs attributed by Davidson to the Eighty Mile Beach area possess both these elements. However, the space design is rarely systematically organised and is usually, as Davidson notes (see above), only determined by repeating the original maze, until the surface of the shell is totally filled. There are some shells, however, in which the space design can be seen to be based on concentric diamonds or rhombs, with an infilling of herring-bone motif (Davidson 1949: Plate 23, Fig. 3) (Plate 28). It is possible also that these designs incorporate anthropomorphic elements. These may be concealed by the over-laying of the zigzag on an anthropomorphic figure in the true interlocking key style of the Dampierland Peninsula.

iii) *The ladder.*

This design, which is not common, consists of sets of parallel lines joined by shorter rung-like bars. A Nyikena informant interprets these as *mirra*, the worm or blind snake (*Typhlops* spp.) which is believed to be a manifestation of the Rainbow Serpent. These designs are found in conjunction with either zigzags or loosely radiating incised lines (Plate 29).

iv) *The star and parallel line motif.*

This motif, as noted by Mountford and Harvey (1938: 125), is of Centralian origin. In Western Australia, engravings of stars have been seen on only two shells (Plates 14, 30).

v) *Concentric circles, rhombs and squares.*

Concentric circles are another Central Australian motif occasionally applied to shells. They are engraved by Aborigines with affiliations to the desert. They are uncommon, but may become more common in the future, as desert influence spreads. The concentric circles, executed with a pair of compasses on the Dampierland specimen illustrated by Mountford and Harvey (1938: Fig. 2B), I regard as an infilling technique.

Davidson (1938: 67) believes that the hard surface of pearl shell makes it more difficult to engrave with rounded designs. This is incorrect as concentric circles are recurrent motifs on wood and stone objects in other parts of Australia. The latter, made of rocks including phyllites, schists and shales,



Plate 31. Concentric circles, squares or rhombs have been rare on pearl shells in the past. These motifs are typically associated with the art of the central mid-western desert areas: **a**, unprovenanced; **b**, Balgo, WA.

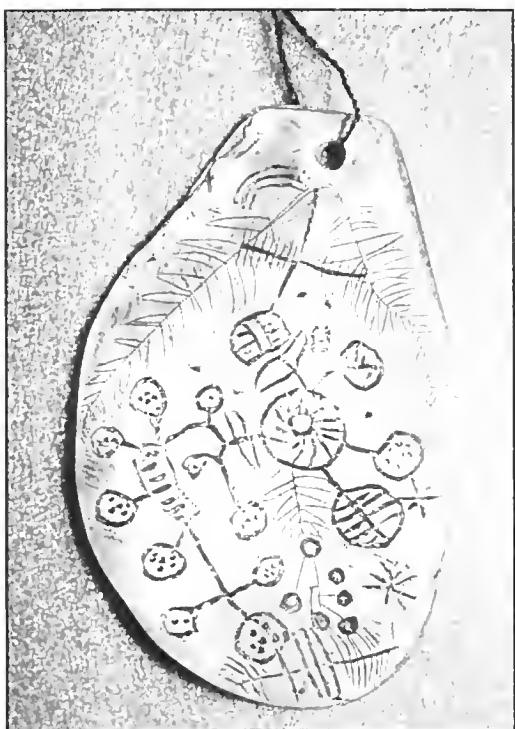


Plate 32. Shells carved in the traditional figurative style; **a**, botanical motifs including leaves and tuberous plants. SA; **b**, a small reptilian figure is engraved on this small blade, Forrest River, WA.

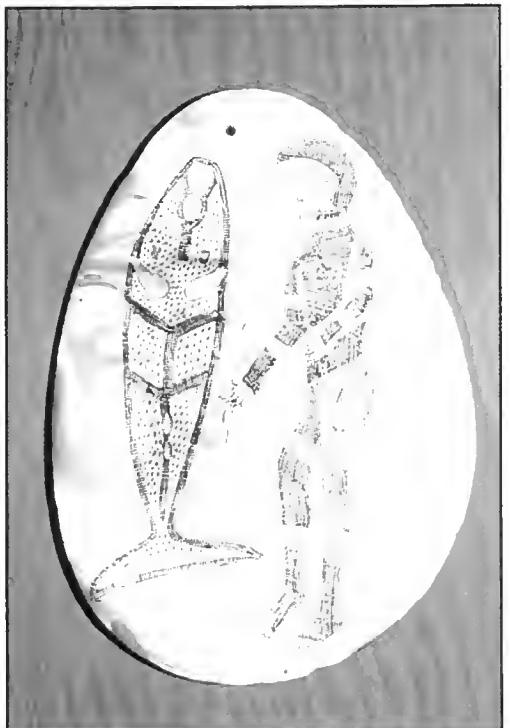


Plate 33. **a**, "Cod is Love". This finely engraved shell was recorded at Sunday Island, WA, by anthropologist A.P. Elkin in 1927-28. Note the cicatrices on the chest of the male figure; **b**, a female dugong lies on her back next to a male figure showing body painting on this unprovenanced pearl shell.

frequently have a hardness similar to pearl shell. In fact, curved lines do exist on shells which are engraved with the bilaterally symmetrical variations of the interlocking key design.

The tight concentric rhomb or square motif, while common on wooden objects south of the Kimberley region, is rarely found engraved on shell. Where it does occur, it is likely to have been applied by desert craftsmen who are more familiar with its application on wooden objects (Plate 31a,b).

vi) Minimally marked shells.

These are shells that bear only random and/or sub-parallel fine line incisions. According to Love (1917: 27), these represent eiseatrices among the Worora. They may also represent an economic method of releasing the essence of the shell in rituals such as rain making. Such shells often occur in areas peripheral to the main centres of shell engraving. This suggests that unmarked shells may have been traded prior to the development of the more refined and formalised engraved designs.

Interstitial elements.

Shells bearing zigzags, meanders, mazes and interlocking key motifs may sometimes bear linear arrangements of dots or tracks - bird, animal and human - that run between the continuously engraved lines of the major design. Occasionally the entire background may be loosely filled with lightly drilled holes that, when accentuated by the addition of oehre, create a stippled effect. Small, isolated linear elements may also be used to fill in larger areas of the major design. Saville-Kent (1897: 10) attributes the derivation of the triradiate (bird track) motif to the "broad arrow of the British Government". However, this attribution is unacceptable. The motif not only has an extremely wide and ancient distribution throughout Australia, but is also consistently identified as a bird track in the ethnographic literature, wherever it occurs.

The development of geometric design on pearl shell.

Evidence obtained by examining shells collected, drawn or photographed prior to 1900 suggests that the zigzag and random meander motifs predominated at the turn of the century.

Peggs (1903: Plate XV) illustrates four engraved shells from Roebuck Bay that were obtained between 1898-1901; all are engraved with the angular meander motif. Edge-Partington (1890-98: 131, 209, 364), illustrates four pearl shell ornaments from the north-west coast of Western Australia. Of the four, three are plain and one has been engraved with a vertical zigzag motif.

Similarly, Campbell and Bird (1915) illustrate five shells from Sunday Island, Western Australia, all of which again are engraved with angular meanders. This raises the possibility of a more recent development of the bilaterally symmetrical style in the Dampierland-Buccaneer Archipelago region.

Porteus (1931: Plate II) provides the earliest evidence for the presence of the bilaterally symmetrical style. This occurs on a shell worn by an Aboriginal man from Broome who was presumably photographed during Porteus' 1929 field work in north-western Australia.

FIGURATIVE ENGRAVINGS ON PEARL SHELL

There appear to be two broad categories into which figurative designs can be classified. These categories, based on mode of execution, I term the "traditional figurative style" and the "realistic style".

i) Traditional figurative style (Plate 32a,b).

These are engraved depictions of plants, animals and occasionally material objects, presented in a manner similar to paintings found in rock shelters in the northern Kimberley. Mountford and Harvey (1938: Fig. 4E) illustrate a crocodile engraved in this fashion on a shell collected at Bernice Bay, Western Australia. Similarly, the shell blade from Forrest River, collected in the early part of this century, depicts a reptile (?) executed in this manner.

An unusual shell, exhibited in the Museum of African and Oceanic Art, Paris, appears to depict cephalopods, although they are identified on the caption as *mimi* spirits. While they do bear a striking resemblance to some forms of "spirit" figure paintings from western Arnhem Land, it is highly unlikely that the shell originated in this region.

ii) Realistic style.

The "realistic style" is self explanatory and reflects post-contact influence in both style, and often content. A wide range of motifs including plants, animal, Aboriginal and non-Aboriginal items of

material culture and symbols, as well as humans engaged in a wide range of activities, are motifs engraved in this style. Invariably the engraving has been done with a fine-edged metal tool, the lines being scratched or incised into the shell. Fine-line incision and stippling is used to infill figures, allowing tonal variation and perspective in many of the realistically engraved shells.

In his unpublished field notes on the northern Dampierland Peninsula and adjacent Buecaneer Archipelago, Elkin (n.d.: 45) noted that the Sunday Islanders "carve human and fish, bird, and animal designs on shell; the designs which I have seen, apart from fish, cannot belong to the Island, consisting as they do, of emu and kangaroos which are not found on it, and of European persons, pipes and hats. One contained English words, 'Cod' or 'God is love'. One shell depicted a kangaroo smoking a pipe." Elkin also noted that shells carved in this fashion had been traded as far south as La Grange (Elkin n.d.: 44-45). The "Cod is love" shell is now in the Macleay Museum, University of Sydney (No. A 2014), and depicts a hatted male, wearing shorts standing between a dolphin and a dugong. A series of transverse lines on his chest and torso apparently represent body scars (Plate 33a). Elkin attributes the "realistic style" to mission influence. This view reflects an extremely limited perspective of the extensive non-Aboriginal influences which impinged on the area prior to the time of his fieldwork in 1927-28.

When Elkin undertook fieldwork on the Dampierland Peninsula, three missions were located in the area: two were controlled by the Catholic Church (Beagle Bay and Lombadina) and the third (Sunday Island), initially Anglican, was then controlled by the United Aborigines Mission. There can be no doubt that these institutions had a great influence on the Aborigines of the area, and to a lesser extent continue to do so today.

However, Aboriginal people came into contact with many other people long before the missionaries arrived. William Dampier, as a crewman on the *Cygnet*, landed on this section of the coast in 1688. At One Arm Point a large tamarind tree may reflect contact with Maccassan fishermen. In 1838, Captain Robert Fitzroy carried out extensive coastal surveys in the area on behalf of the British Admiralty (Stokes 1846). With the advent of commercial pearlting, Nyul Nyul, Bardi and Djaui men and women, with their vast and intimate knowledge of the local geography and maritime conditions, were much sought after to crew the luggers.

The wide and prolonged degree of contact in this region of Western Australia provided Aboriginal people with a range of opportunities by which new shell engraving techniques and motifs could have been acquired and encouraged. There is no doubt that mission craftsmen influenced Aboriginal artists who worked pearl shell. However, the influence of similarly skilled people in the pearlting fleets would have equalled or surpassed that impact. It is also likely that the pearlting industry provided a greater and more accessible supply of shell and probably nurtured the art of shell engraving beyond the pre-contact centres. The motifs, as noted earlier, are depictions of natural scenes familiar to the artists, or scenes of activities, and objects that have historical or cultural significance.

One shell in the Welleome Collection, Museum of Cultural History (UCLA No. X65-4855), Los Angeles, depicts an Aboriginal male in three-quarter profile beside a large female dugong (*Dugong dugon*) shown in ventral view. The gender of the dugong is clearly indicated by breasts and genital slit, and the mid-section is divided transversely by a pair of broad, hachured, linked chevrons. Female dugong are prized as food, the taking of which required much patience and skill particularly prior to the introduction of harpoons (Plate 33b). It is possible that the chevrons represent the two primary incisions customarily made when butchering a dugong on the Dampierland Peninsula. Although harpoons were an element of the hunting techniques of Australian Aborigines, from north-eastern Arnhem Land across to the vicinity of Rockhampton in Queensland, they were absent on the Kimberley coast until introduced by pearlers in the late nineteenth century. Prior to this, dugong were taken in this area by spearing with heavy unbarbed spears, or by hand using the sheer manpower of large groups of men, who surrounded animals located in shallow water or tidal creeks. This type of hunting took place on calm nights at full moon.

Serpents are another common element depicted on pearl shell. Throughout Aboriginal Australia a plethora of serpent-beings are believed to exist, and shells depicting snakes (Plate 34a,b) can be readily slotted into a regional or local mythological context as they are transferred across the continent.



Plate 34. a, a blade of window-pane shell incised with a snake in the traditional figurative style, Forrest River, WA; b, serpents emerge from a spring on this shell carved by Butcher Joe Nangan at Broome and photographed at Balgo, WA.



Plate 35. A variety of Christian icons are engraved on this shell. Palm fronds, fish and the moon in various phases surround the initials H.S. - Hominum Salvator. Balgo Hills, WA.



Plate 36. **a**, the biplane with wings shown in twisted or rotated perspective is incised on the back of a shell. A meander or maze is engraved on the obverse side. Wave Hill, NT; **b**, a finely incised biplane with wings and tail rudder rotated in relation to the plan view of the body is engraved on the back of a pearl shell from Christmas Creek, WA.

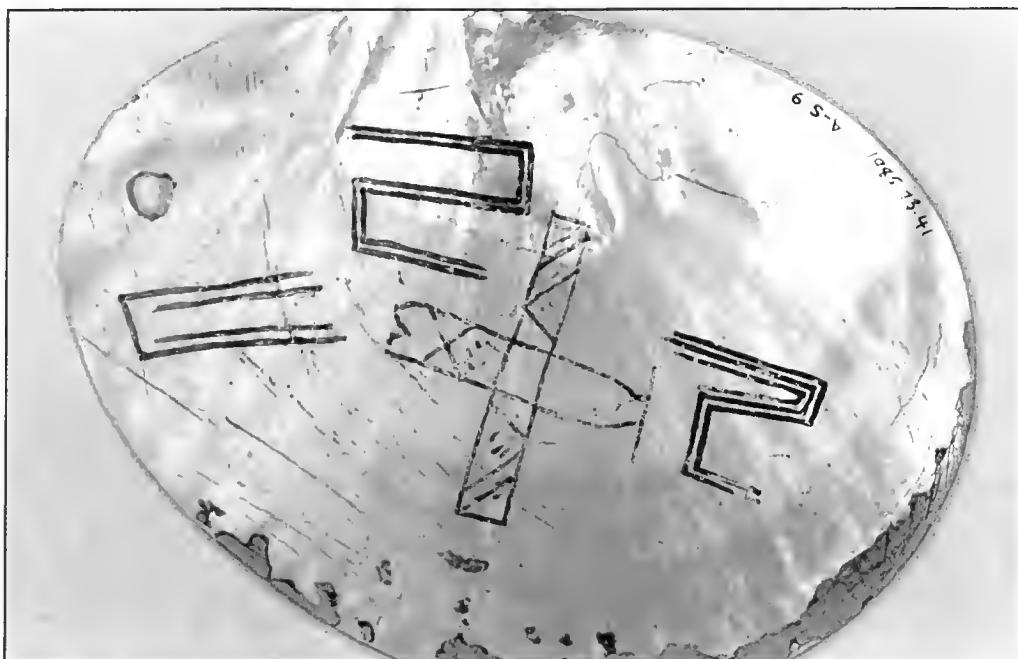


Plate 37. An apparently crashed or damaged plane is incised on the back of a pearl shell collected at La Grange, WA.

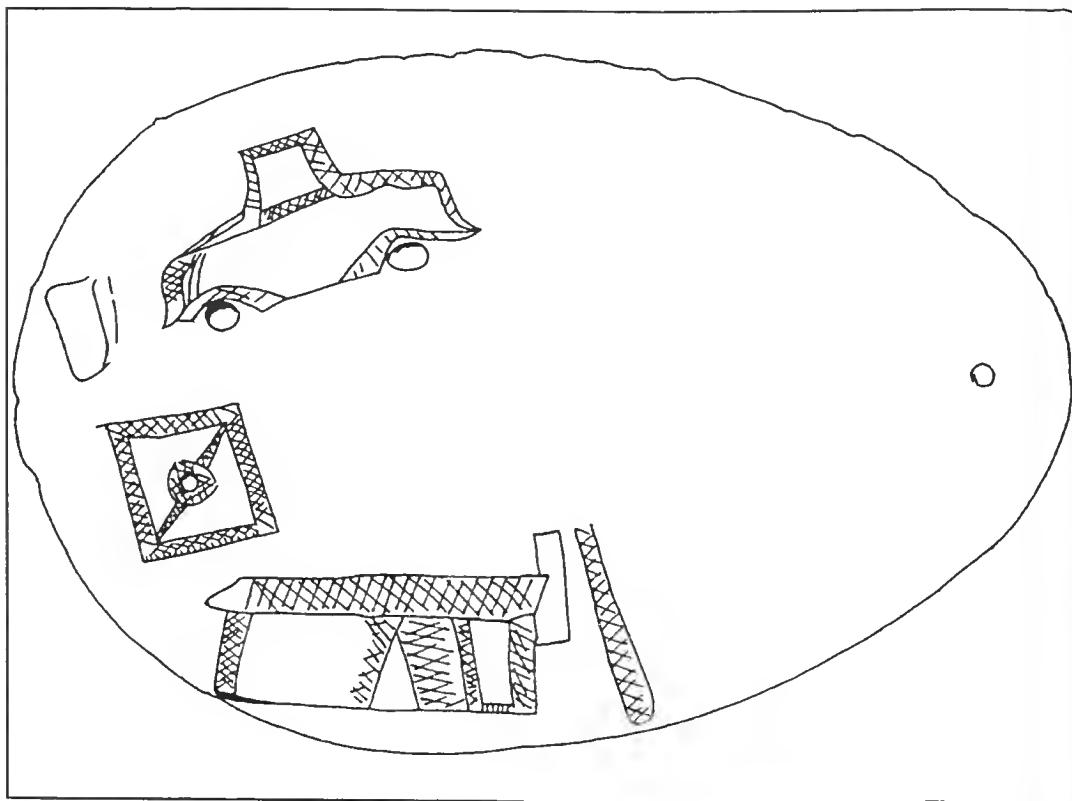


Fig. 2. The engraved vehicle on the *Kookaburra* pearl shell. Purchased in Alice Springs, this shell was believed to have originated from Yuendumu. Drawing courtesy of R.G. Kimber.

Non-traditional motifs.

In a more historical vein, the engraving of non-Aboriginal symbols and technological objects on shell reflects the variety of experiences that have influenced Aboriginal life in the Kimberley since Europeans arrived there.

One shell pubic pendant (No. 970) in the collections of the Berndt Museum of Anthropology bears a variety of Catholic Church symbols (Plate 35). Prominent are the initials H.S. (Hominum Salvator, or perhaps Holy Spirit). Less obvious are fish, palm fronds, and the moon, shown twice in partial eclipse or in first and last quarter phases. Fish have been used as a Christian symbol from the formative period of Christianity, particularly so during the period when adherents to the religion were being persecuted by Imperial Rome. The palm fronds represent the entrance of Jesus into Jerusalem. The phased or eclipsed moon is a symbol of the Virgin Mary. The motifs found on this shell appear not to have been all executed concurrently and therefore they may not necessarily reflect an entirely Roman Catholic input. This shell, which was obtained at Balgo, is attributed to La Grange on the Eighty Mile Beach. It is more likely, however, that it was engraved at the Beagle Bay Mission, where a more orthodox form of Catholicism had been introduced and maintained by members of the Trappist and, subsequently, Pallottine Orders, since 1890. Residents at the Mission were encouraged to develop skills for working both pearl and turtle shell in a wide variety of styles and techniques, to produce curios and jewellery of a high quality. The engraving on this particular shell reflects these skills, as well as the sectarian orientation of the mission itself.

On a more secular note, it is not uncommon to find shells exhibiting the symbols depicted in a deck of playing cards. It is virtually impossible to provenance such shells, as card games were introduced into the Kimberley region from both the west and the east, with pearlers and pastoralists. Card games were both adopted and invented by Aboriginal peoples and the suite symbols usually engraved on



Plate 38. A finely detailed and carefully engraved image of a saloon car framed by leafy sprays dominates this shell. The butterfly and heart have been added by a less accomplished artist. Kimberleys, WA.



Plate 39. The vehicle depicted on this shell may represent that used by Bishop Raible, Catholic missionary and Bishop of the Kimberley. Cape Leveque, WA.

shells are "Aces" signifying "good luck". Shells decorated with card symbols are included in a range of objects, organic and non-organic, that may be classed as "luck" magic, both in cards and in love (Akerman and Bindon 1987: 22-32). Rose (1965: 89-90) discusses a shell pendant, collected at Angus Downs in 1962, on which is engraved a club and a diamond symbol enclosed in a large divided diamond. He believed that this example was engraved in Central Australia and suggested "it would appear that card playing has entered into the cult life of the Aborigines or alternatively the Aborigines' cult life has entered into their card playing". I would suggest that the latter situation prevails, since many traditional objects and substances used to enhance good fortune in hunting, love making and other activities are now also used to ensure success at gambling. Playing card symbols engraved on pearl shell serve mainly to focus the power of the charm on the task at hand - card games. In a broader dimension "aces" represent an introduced luck symbol that may enhance the power of the charm generally, regardless of its original purpose.

Among introduced technology depicted on pearl shell the most interesting motif, and one which is also relatively common, is the aeroplane. Kimber (1982: 48-60) has discussed the impact that the first aeroplanes in the central Australian region had on the Pintubi. These people regarded the aircraft as manifestations of the giant eagle, Walawurru. In the Kimberley, aircraft were a feature of life from 1921, when West Australian Airways (WAA) commenced service. Charles Kingsford Smith flew for WAA at this time, and the Nyikena elder, Paddy Roe, remembers taking a joy ride over Broome with him. Aborigines were also directly involved in two spectacular Kimberley rescues, after aircraft crashed in the West Kimberley in 1929, and on the northern coast in 1932. The late Albert Barunga, and Wattie Ngerdu, when young men, were the first people to reach the crew of the *Southern Cross* after it put down on mudflats near the Glenelg River on Easter Sunday, 1929. Those rescued were Kingsford Smith, Charles Ulm, T.H. McWilliams and M. A. Litehfield, who were attempting to fly from Wyndham to England. The search for Kingsford Smith resulted in the tragic death of two other aviators, Keith Anderson and Bobby Hitchcock, who were forced down in their Westland Widgeon II, the *Kookaburra*, between Lake Woods and Wave Hill in Central Australia. Nash (1982: 61-73) provides details of Aboriginal involvement with the search parties that located the crash site.

Nash noted also that contemporary Aborigines in the area have maintained knowledge of the site, and use it as a reference point when discussing Aboriginal sites in the adjacent area. Barwick (1982: 74-80) explored the possibility that a pearl shell engraved with two biplanes, one in plan view and the other of the same plane apparently crashed, as being a record of the *Kookaburra* tragedy.

An argument against this interpretation is the fact that one picture depicts a complete plane. This suggests that the artists had more than a brief glimpse of a crashing plane. I suggest that the shell was engraved further to the north-west, as the planes are engraved in a style similar to that I call the "traditional figurative" style of north Kimberley engravers. Neither the *Southern Cross* nor the *Atlantis* was as extensively damaged as the crashed plane on the shell and so it cannot be considered a record of these incidents.

The second crash of importance in the Kimberley occurred near Cape Bernier in May 1932, and concerned Hans Bertram and Adolf Klausmann flying the *Atlantis*. The two men were found in a desperate condition by four Wunambal men from Drysdale River Mission in late June. They were so weakened that the Aboriginal rescuers had to pre-masticate food for them until they recovered sufficiently to eat for themselves (Perez 1977: 82-84).

One shell, still in the possession of the family of the Aboriginal artist who engraved it, is said to depict the first aeroplane and the first motor vehicle seen in Derby. This shell is regarded as a family heirloom and is only produced for ceremonial activities.

Shells bearing pictures of aeroplanes are reputed to be effective agents in inducing "spirit travelling" experiences. "Spirit" or "dream" travelling is a skill used by knowledgeable men and women, often requiring complex ritual objects incorporating crystal or shell "lights" to fly to distant places (vide Tonkinson 1970: 277-291). In many places in the Pilbara, Kimberley and Western Desert, there are people who are said to have watched the destruction of Darwin by Cyclone Tracy in 1974. By spirit travelling they were believed to have witnessed the unleashed power of the Rainbow Snake, a warning to those Aborigines who had strayed from the Law. Aeroplanes with their seemingly magical properties of flight provide a powerful talisman when engraved on shell. The creation of the Royal Flying Doctor Service, which commenced its Kimberley operations in 1935,

may have led to aeroplanes being associated with further powers associated with healing. Recently, shells with aeroplanes engraved upon them are often included in caches of objects associated with the travelling ritual known as "Jularu" in the Kimberley or the "Balgo Business" in Central Australia.

It is interesting to note that most of the aircraft seen engraved on shell are biplanes. This may reflect the fact that biplanes were the first planes to be seen in the region and also that biplanes *per se* represent the "ancestors" of the wide range of aircraft that are now seen everyday throughout remote areas of Australia.

In some cases, it is difficult to decide whether an engraving depicts a single wing aircraft or a biplane. If a series of images of aeroplanes are examined however, most wings of what appear to be single wing aircraft have a series of transverse bars incised across them. These bars represent the struts, and the wings are in fact depicted as if they have been placed at right angles to their normal position. This rotation of perspective of individual elements of an engraving ensures that the characteristics of each element are not obscured or diminished in their relationship to the whole. With this in mind, there is no doubt that the aircraft engraved on the *Kookaburra* shell is meant to be a biplane. Similarly, the aeroplane incised on the convex outer surface of the shell collected by R.M. and C.H. Berndt at Wave Hill in 1944 is also a biplane (Plate 36a). Considering the provenance and date of collection, it could also be possible that this shell records either the *Kookaburra* or another aircraft associated with the search. This shell (WU 975) is now housed in the Berndt Museum of Anthropology, University of Western Australia. In the same institution is a second shell, also engraved with an aeroplane. It was obtained at Christmas Creek Station in the southern Kimberley. This (Plate 36b) is clearly a plan view of a biplane and is exceedingly well engraved. The wings are depicted at right angles to the fuselage, but in this instance it is clearly indicated that the upper wing is located above the fuselage and the lower wing beneath it.

Elkin also collected a pearl shell engraved with an aeroplane during fieldwork among the Karadjeri at La Grange in 1927-8. This shell, now in the National Museum of Australia (No. A-S 9), shows the fore-section of an aircraft, with the fuselage terminating in a jagged break and without the tail section. This picture may also be the record of an actual crash (Plate 37).

I have already indicated that automobile motifs also occur on pearl shell. For example, the *Kookaburra* shell discussed by Kimber (1982: 48-60) also bears an engraving of a motor vehicle on its inner or concave side (Fig. 2). From the profile, with a high angular and centrally positioned cab that contrasts clearly with the curved extremities and mud-guards, it appears that a Model-T Ford or some similar three-quarter coupe vehicle is depicted. The wheels are so reduced in proportion to the rest of the vehicle that they may only represent the axle hubs with wheels removed.

One shell, collected in the Kimberley and now in the Macleay Museum at the University of Sydney (No. A2007), bears a detailed image of a saloon car on it. The vehicle is depicted in three-quarter view with wheel spokes, engine cowling, radiator grill, running boards, divided windscreen and steering wheel all meticulously depicted. Above the vehicle, and separated from it by two sprays of leafed branches, are two butterflies or moths, one on each side of a heart shape that is itself divided by double chevrons (Plate 38). This shell appears, after comparison with a shell in a private collection in Broome, to have been engraved by Akamo, the Bardi grandfather of the present custodian of the Broome shell. An aircraft and an automobile engraved on the Broome shell are said by the Aboriginal owners to portray the first such vehicles seen in the Kimberley.

Another shell in the Macleay Museum (No. A2020) bears the engraved image of a saloon vehicle (Plate 39). The picture of this vehicle and a moth (or possibly a fly) that also occurs with it, has been engraved using the "rocking" technique. In contrast to the fine zigzag lines that have been used to construct the vehicle and the moth, the two intertwined leafy branches which divide the shell into two major panels have been incised deeply into the nacre. This vehicle has radiator cap, cowling vents, running board, divided windscreen and rear window all clearly depicted. A crucifix has also been engraved on to the side panel of the vehicle. This suggests that the shell, collected at Cape Leveque in 1931 by Gerhardt Laves, depicts a Church or mission vehicle. In the 1930s only senior members of the clergy were given access to vehicles by the Church in the Kimberley, and this particular shell may well depict the vehicle used by Bishop Raible, Catholic Bishop of the Kimberley, on his tours of inspection. The Bishop was often chauffeured by Willie Wright, a Bardi from the Cape Leveque area, whom he had taught to drive.



Plate 40. Engraved in the traditional figurative style, this station wagon or bus shares a shell with serpents. Christmas Creek, WA.



Plate 41. Sprays of foliage frame an enigmatic broad hachured element that may, depending on how it is viewed, be the initials OH, or HO. Cape Leveque, WA.



Plate 42. Baby turtles graze on fronds of seagrass on this beautiful but unfortunately unprovenanced pearl shell.

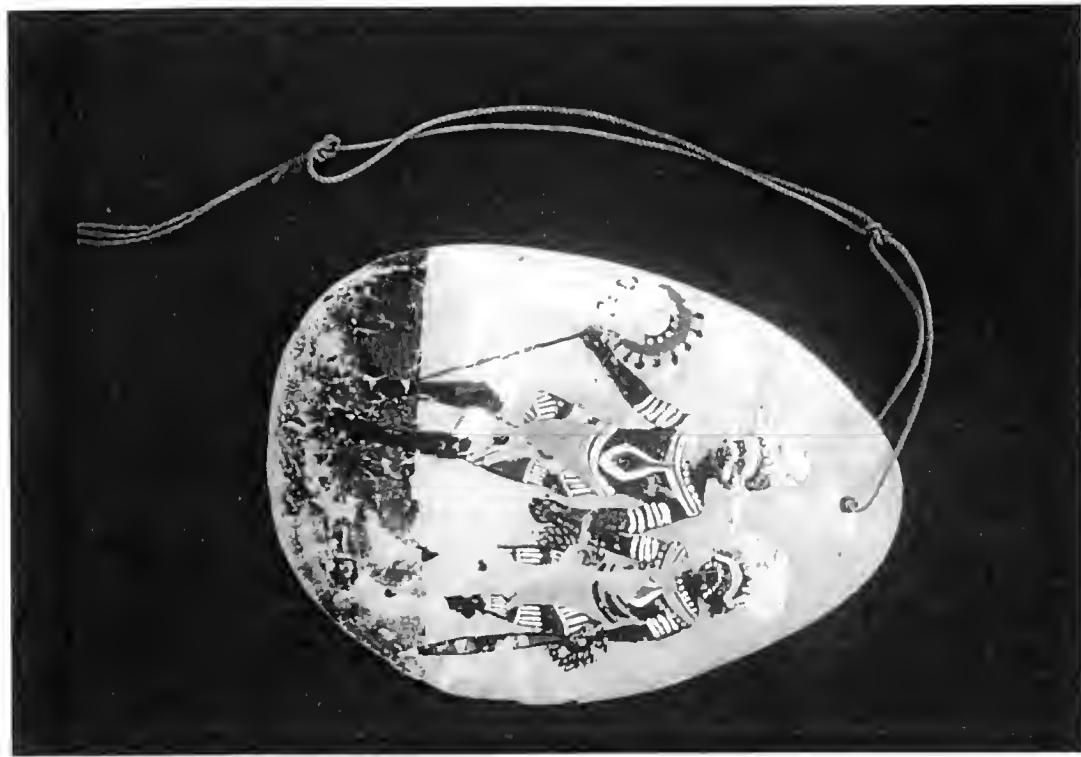


Plate 43. A detailed ceremonial scene executed in acrylic paint covers the face of this unique pearl shell. Fork Creek, WA

While most automobile images are engraved in the realistic style, examples of shells with images engraved in the traditional figurative style can be found (Plate 40).

Botanical motifs.

Within the "traditional figurative" style, a wide range of botanical motifs, often clearly related to traditional foraging activities, are portrayed. Images are depicted in a way that suggests clear continuity with Kimberley rock art. Plants such as water lilies or their rhizomes, and yams or other tuberous rooted plants, are not uncommon.

By contrast, plant motifs associated with pearl shell engraved in the realistic tradition are usually restricted to leafy sprays or "wands". Such "wands" are often symmetrically paired, serving to frame other motifs (Plate 41). Sometimes when intertwined with splayed extremities, they compartmentalise the surface of the shell. Naturalistic depictions of botanical subjects do, however, occur. The Macleay Museum contains a shell engraved with a charming scene depicting turtles grazing. This shell (No. A2005), unfortunately unprovenanced but presumably from the Dampierland Peninsula, pictures twelve juvenile turtles grazing on a marine plant (Plate 42). The roots of the plant enclose the suspension hole, and two fronds fall to divide the shell into three compartments, one central and two lateral, before intertwining at the base of the shell. The turtles are grazing on the trilobed flowers that alternate along the fronds with more conventional leaf-like structures. Clearly a specific plant type is being depicted here, possibly the sea grass *Halophila ovalis*.

Painted pearl shell.

Although the painting of pearl shell, usually with scenes of luggers or of tropical sunsets, appears to have been a longstanding tradition in the tourist centres such as Broome, it is only rarely that such works are created by Aboriginal artists. Exceptions, however, are to be found. An example of one such shell was obtained at Fork Creek in the East Kimberley in 1975. This shell, shaped and pierced for suspension, bears a painting executed in acrylics, of dancing Aboriginal men (Plate 43). Another shell seen at Balgo Hills in 1991 had a zigzag design executed with red, brown, purple and green textacolour pencils on its inner face. Occasionally shells may be painted with broad bands of red ochre for use in ceremonies.

Change in figurative motifs engraved on pearl shell.

The motifs displayed on pearl shell reflect a process of stylistic and social change. This shift progresses from symbolic and schematic representations of cosmologically important elements and beings, towards the realistic portrayal of objects or events that are part of everyday life. Where once the engraving of a limited range of motifs onto pearl shell was undertaken only at a limited number of centres, pearl shell is now engraved throughout the north-west and Western Desert areas of Western Australia. The engravings executed include both traditional and innovative motifs.

The realistic art executed on pearl shell reflects, not only the adoption of new styles of depicting the natural and social environment, but more importantly perhaps, an expansion of the range of experiences to which the artists have been exposed. The introduction of new technologies and living styles into the everyday scheme of life, and their absorption within a traditional framework, is but another example of the generous adaptability and creative genius to be observed in the area of Australian Aboriginal arts, whether it be music, song, theatre, painting or sculpture.

Shell engravings on the north-west coast today.

Between the years 1965 and 1986 very few shells were being engraved for traditional purposes in the area between Sunday Island and Port Hedland. Engravings, usually of innovative images including scenes of the pearling industry, were produced in response to the demands of the growing tourist industry and were invariably executed on unmodified valves. The late Butcher Joe Nangan, and the late Basil "Biggie" Albert were the master artisans of this period. Both these artists possessed distinctive styles rendering their work instantly recognizable (Plates 44a,b, 45a-c). The major difference between the two artists was their rationale for the images they chose to produce. Butcher Joe always depicted scenes derived from his vast knowledge of oral history, local traditions and mythology. Basil usually engraved natural valves to satisfy the general market, although traditional shell pendants engraved by him do exist. Scenes derived from the pearling and pastoral industry as well as portraits, are recurrent motifs.

Throughout these years, Aboriginal people from the hinterland who wish to obtain pearl shell, acquired through trade unmodified valves, often derived from commercial shelling enterprises.

Occasionally shells are purchased directly while passing through Broome, either voluntarily, or when attending the district hospital or the regional prison.

Since 1988, a small number of aboriginal craftsmen from Lombadina, north of Broome, have been producing shell pendants engraved with a variety of designs derived from the earlier traditional patterns (Plate 46a,b). In contrast to the artwork of the earlier engravings, the contemporary engravings consist of much longer lines, with fewer angles, which often divide the shell into quadrants. Angles are usually 90 degrees and not all four quadrants may be filled with engraving. Linear elements often terminate in an acute angle. The elements themselves are often wholly or partly infilled by stippling to emphasise the design. In older shells stippling usually occurs as an interstitial rather than a primary component of the design. Other designs produced belong to the bilaterally symmetrical style. These however, do not possess the same sense of balance or proportion in relation to the ground that is evident in earlier shells of this genre.

A further and most interesting innovation is that the individual designs are named, usually after marine mammals and fish. This practice is very recent and, as these pearl shell are specifically produced for sale in the art and craft industry, the naming of designs may be a response to a public that seeks deeper and more esoteric meanings for the Aboriginal art that they are purchasing.

The pearl shell in Aboriginal art.

Pearl shell is itself occasionally depicted in Aboriginal art. It occurs only rarely as a motif or in traditional art, but is common in innovative art, including sculptures and paintings. This is particularly so in the Kimberley and adjacent areas of north-western Australia.

Elkin (1930: 273-274; 1948: 7, 13) interpreted the black oval on the upper torso region of many paintings of the Kimberley creator beings, *Waudjina* (Plate 47), as a shell pendant. These were, however, interpreted by Elkin's informants as beards. Love (1930: 15) and Schultz (1956: 50) provide other interpretations for the feature, including the sternum or breast bone, the heart, and also the power that *Waudjina* possess internally. Both Black (1964: 24) and McCarthy (1979: 52) regard these features as shell pendants. Unfortunately Crawford (1968), in his examination of *Waudjina* art, does not address the nature of the meaning ascribed to this symbol, although he does at one point (1968: 49) describe it as a breast bone. I have heard Ngarinyin informants occasionally refer to these features as *jakutli* (pearl shell pendants) and it is possible that interpretation may be dependent on the specific *Waudjina* with which it is associated. One *Waudjina* image wearing a waist girdle with attached oval pubic pendant, possibly a pearl shell, is illustrated by Crawford (1968: 51, Plate 36). This image is located at the very periphery of the *Waudjina* art region, and may represent other cultural influences.

Tindale (1987: 54, Fig. 100) illustrates a petroglyph at Port Hedland that has been interpreted as a necklace of pearl shell pieces, fixed with resin to a band of fur string. I am hesitant to accept this interpretation, as the object depicted may also represent a kangaroo tooth fillet or other composite headband or necklace. There is, however, evidence that shells were occasionally stencilled on rock surfaces. For example a small rock shelter in the Grant Range, adjacent to Looma community, contains numerous stencils of a variety of objects including firesticks, stone hatchets, a shield, kangaroo feet, human hands and feet, and an oval object that appears to be a large pearl shell pendant (Plate 48).

Carved anthropomorphic figures have been reported from Jigalong. These represent spirit children, *djidjigargal*, of the *Ngaymangalgu* beings who are said to dwell beneath Lake Disappointment in the Western Desert. Although the *Ngaymangalgu* prey on human beings, they are all-powerful allies of those humans who are tonomically associated with them. Mountford and Tonkinson (1969: 371-390) discuss five carved and engraved figures of *djidjigargal*. Two of these figures have been engraved wearing pearl shell pendants about their necks (Plate 49). These pendants are shell magical objects or *mabau*. In addition, an object is illustrated by Mountford and Tonkinson (1969: 387, Fig. 3e) on which a human figure is depicted wearing a pearl shell. The object is one used for love magic, and the figure represents a *Mudingga* woman. The *Mudingga* are small spirit people who live in caves and hollow trees along the Oakover River in the Pilbara region. Similar ritual objects bearing naturalistic engravings of a mythic being wearing pearl shell phallocrypts from the Dampierland Peninsula are illustrated by Worms (1950: 656-657; Figs 6,7). Examples of the *Ngaymangalgu* sculptures are housed in the Berndt Museum of Anthropology, University of Western Australia.



Plate 44. Pearl shells decorated by Butcher Joe Nangan: a, *Yapa Yapa* women dance on the crest of a wave, Broome, WA; b, *Nyari-nyaripungu* fights the rainbow snake *Inguruku*, Broome, WA.

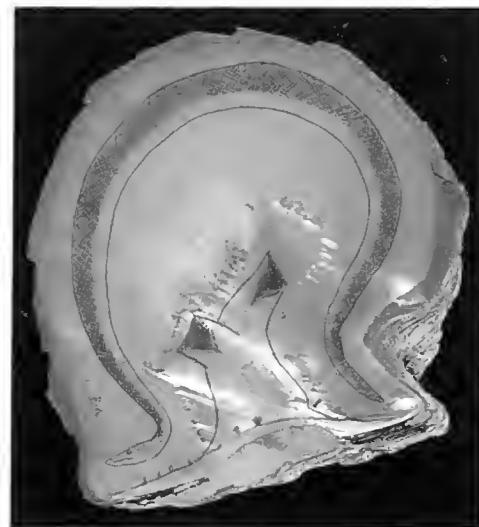


Plate 45. Pearl shells by Basil Albert: a, a graceful serpent arched over a tree stump parallels the margin of this untrimmed shell; b, a natural valve engraved with scenes drawn from earlier days and birds and animals, Broome, WA; c, a prepared but unpierced shell showing aeroplanes and a motor vehicle as well as fish and a dugong, Broome, WA.

Another sculpture (No.WU6044), in the same institution, depicts a Bardi spirit or *Nimandara*. Acquired by E.A. Worms about 1934, this carved and painted sculpture is adorned with a pearl shell suspended from a hair string belt. Originally the figure held a thread-cross ornament between its hands above its head. This has apparently disintegrated and the shaved stick pegs about which the thread work was woven are now tied about the neck of the figure. Pearl shell blades, *pindjawindja*, of which only two remain, are affixed across the chest region. These are said to represent lightning (Stanton 1988: 51-52; Worms 1942: 230, Fig. 7) (Plate 50).

THE 20TH CENTURY EFFLORESCENCE OF ABORIGINAL MANUFACTURE AND USE OF PEARL SHELL

Around 1900 there was a rapid increase in the Aboriginal production and exchange of pearl shell. Several artistic styles associated with pearl shell, which have usually been regarded as being of some antiquity, appear to be recent developments. The reasons for efflorescence of the manufacture and increasing use of pearl shell in the early to mid 1900s must be sought in the context of both the external and the internal, or indigenous historical scenarios.

In order to explain these phenomena, it is essential to examine briefly a number of points that reflect aspects of Aboriginal life in the Kimberley and adjacent areas, between the late 19th Century and 1970. By about 1970 the regular production of engraved shell solely for indigenous purposes had virtually ceased in the western Kimberley. Since then the production and movement of engraved shell from the northwest coast has been extremely sporadic. Plain valves of pearl shells are, however, still moved from this area to the east and the south on a regular basis. In many instances these shells have not been processed - that is, they have not been cleaned, trimmed, shaped or pierced.

Prior to 1864, the Kimberley and adjacent regions had received only sporadic and fleeting visits from outsiders. That year saw an abortive attempt to establish a pastoral enterprise at Camden Harbour in the Prince Regent area. Although this project ended in disaster, it heralded the end of the indigenous lifestyle of many Aboriginal groups, as European settlement founded on pearling and pastoral industries became established.

The history of pearling, and of the interaction between pearlers and Aboriginals, has been carefully documented by Bain (1982). The story is not a pleasant one. From 1860 until the turn of the century, exploitation of Aboriginal people of both sexes by pearlers was a regular occurrence along the north-west coast. Used first as shell collectors, and then as divers, these people were often recruited by kidnapping. They were often treated abominably by the pearlers and murder was a common end to their suffering. Aboriginal retaliation occurred occasionally, but counter-retaliation was always swift and brutal. The Western Australian Pearl Shell Fisheries Act was passed in 1871. This Act made it illegal for Aboriginal women to be employed on, or even be present on board pearling vessels; and Aboriginal men were to be employed under annual agreements that detailed conditions of work, including the return of labourers to their own country at the end of each season. Of course, the Act could not be policed adequately, and as late as 1880, kidnapping of Aboriginals still occurred.

Pastoralism in the Kimberley became established in 1882 with the creation of Yeeda Station on the lower Fitzroy River. Other pastoral leases along the Fitzroy River were taken up soon after. At this period sheep, rather than cattle, were the focus of attention. The opening up of the hinterland to pastoralism was often accompanied by violent and bloody suppression of the Aboriginal occupants. Massacres were not uncommon and many older Aborigines today remember vividly the ferocity with which their kinsmen were destroyed. Blatant in the early years of settlement, "pacification" continued to be used up until the 1940s (Kolig 1988: 1-30). Mission stations provided, in many cases, the only refuge against the hostile invasion, but even they were at times antagonistic to indigenous Aboriginal lifestyles. Though these were havens for physical security, they would profoundly affect the Aboriginal social order.

From the 1880s to the 1930s, radical changes occurred within Aboriginal societies in the Kimberley. Changes in social organization were occurring in some areas, and large religious cults

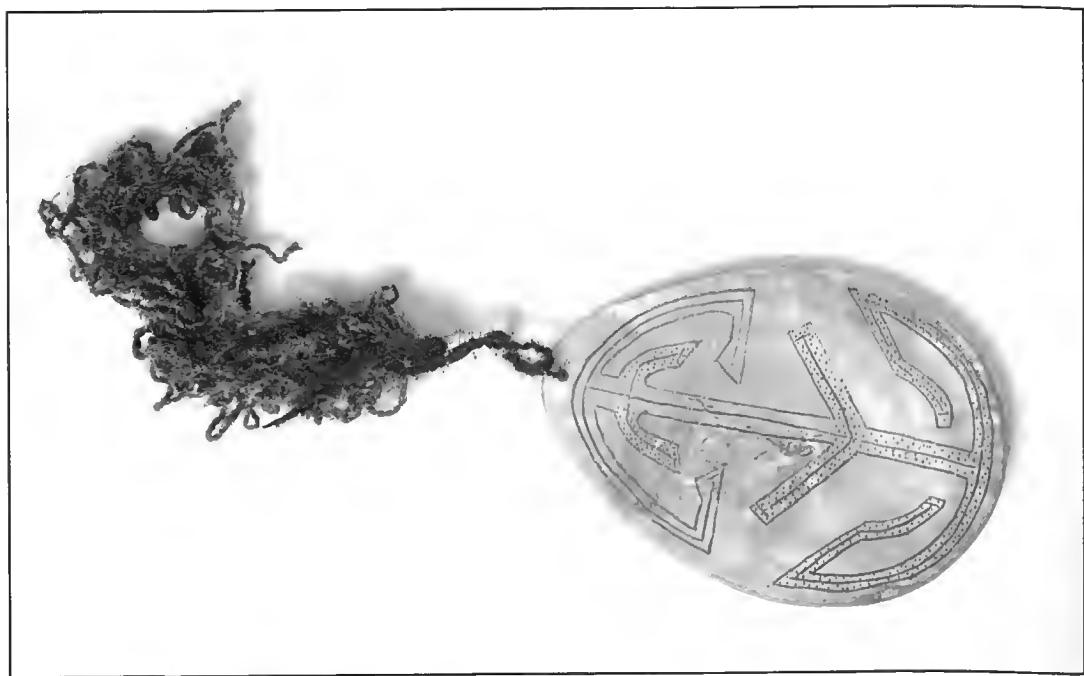


Plate 46. Modesta pearl shells with bilaterally symmetrical designs produced for the commercial market, Broome, WA:
a. *Ra-indya* - the sawfish design; b. *Barnamba* - the stingray.

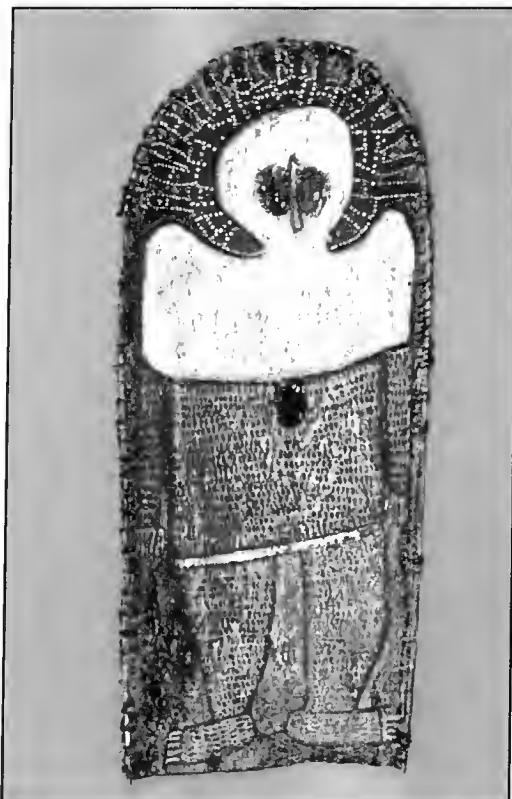


Plate 47. The dark symbols that often appear on the breasts of Wandjina paintings have occasionally been interpreted as being pearl shell pendants. Kalumburu, W.A.



Plate 48. A pearl shell (lower right) is stencilled on the wall of this shelter in the Grant Range, south Kimberley. Stencils of hands, a shield and kangaroo feet may also be seen.

were entering the region from the east and south-east. While these changes may have been accelerated by the advent of European settlement, it is just as likely that they, or other similar phenomena, would have occurred regardless of the European presence. Indeed, it is quite likely that major changes in social organization in any one area were a regular occurrence in prehistoric times.

McConvell (1985a,b) has examined subsection systems in northern and central Australia. Analysis of the linguistic evidence has shown how subsections may have originated by the merging of two distinct section systems. These systems paralleled each other, and cognatic accommodation permitted the creation of the new eight- subsection system of social organization. Historically, the subsection system has spread across northern Australia from a point of origin that McConvell places in the Victoria- Daly River area of the Northern Territory. In the last fifty years subsections are known to have replaced sections in the Fitzroy River area of the Kimberley and are continuing to spread into the Western Desert.

In the Western Desert there is a similar process of accommodation between two different named section systems that have diffused into the area. Rapprochement of the two systems has created a six-section system rather than an eight sub-section system in much of this area.

Over the past sixty or seventy years there has been a continual injection of large religious ceremonial cycles into the Kimberley region from the east and south-east. Some, such as the *Gurangara*, appear to have come from both directions, while others, such as the *Worgaia*, appear to originate only from the south-east. In the last decade at least one major ceremonial cycle, the *Juluru* or "Balgo Business," has moved in the opposite direction, after traversing the Kimberley. These are only brief descriptions of complex processes that reflect the continual state of change and counter-change to be found in Aboriginal society (Akerman 1979b: 235-236; Kolig 1981: 138-176).

Similar sweeping changes have also occurred in the area of art and material culture. The distributions of a variety of engraving styles and associated objects in north-western Australia, recorded in 1939, were plotted by Davidson (1953: 194-213). Of particular importance was his map (1953: 202, Map 3) showing the approximate distribution of the interlocking key design. In 1939 the key design was being engraved on sacred and secular objects on a narrow coastal belt that ran along the Fitzroy River, the base of the Dampierland Peninsula, along the Eighty Mile Beach, south as far as the Fortescue River and in to the immediate hinterland. By 1975, however, the interlocking key was being carved as far to the south-east as the Warburton Ranges, to the east at Balgo Hills and as far south as Cundeelee on the Trans-Australian Railway line.

Similarly, art styles based on concentric circles such as are found in central Australia have been introduced to, and adopted by, many Aboriginal groups in Western Australia. It becomes apparent from reading Davidson's 1953 paper that the adoption of new objects and associated motifs was an ongoing process over much of Western Australia. This process continues up to the present. Many ideas and structures are introduced, adopted, maintained and transferred into and across a region, then become obsolete, as other newer ideas enter. It is likely that the changing motifs found on many decorated objects reflect the movement of religious cults and/or changes in emphasis within the mythic repertoire of a region at any one time.

The growth of the pearlshell industry increased Aboriginal access to pearl shell at two levels. Camps, set up to service luggers and where shells were sorted and packed, provided easier access to larger quantities of shell than would have occurred traditionally. These camps were also often set up in areas where shell was unprocureable using traditional collection strategies, and their establishment gave local groups direct access to pearl shell that they would otherwise have received only through trade.

A further factor was that very few introduced materials possessed the much appreciated qualities of pearl shell. Replacement of shell by other new materials therefore did not generally occur. Pearl shell was itself desired and highly valued by Europeans and Asians, a condition that may have reinforced Aboriginal attitudes to the material when so many other aspects of their culture were treated with contempt.

Centralization of the Aboriginal population in communities brought trading partners into prolonged contact with each other, and hastened the rate that exchange goods passed between partners. Prior to centralization, partners outside the band would only meet sporadically when bands came together for ceremonial purposes.

In some communities today, exchange goods coming in will be received by the individual who is the partner to the externally situated giver; he, in turn, may pass them directly to the person who is the link with the next adjacent external member of the system. This person will be responsible for transmitting the goods to the next community within the system. In this way goods only symbolically pass through the hands of those other exchange partners within the community. If, as is usual, more than one exchange system flows through a community, the goods are then divided between the senior members of the networks who will transmit them accordingly to their partners in other communities. In this way the spatial or geographical relationships between clans, their territories, and the flow of goods are maintained in a situation where many different groups of people have been brought together. The distances that once kept contact between differing bands at a minimum have been telescoped, leaving clear large tracts of country between communities that are traversed rapidly by road or air when the need arises.

By the late nineteenth century, Kimberley pearl shell could be found in western central Queensland, at Alice Springs, or in the Eastern Goldfields region of Western Australia. It was, however, never common. Indeed, as Stirling (1896: 18,109) notes, pendants and puhic covers of baler shell (*Melo* spp.) were far more common in Central Australia in 1894 than were similar objects made of pearl shell. Significantly, Stirling (1896: 109) notes that the baler shell ornaments were "plain or variously marked", but never suggests that the pearl shells seen were ornamented in any way. Spencer and Gillen (1899: 573) stress that the pearl shell they saw in Central Australia was unengraved.

There remains a distinct possibility that disruption of the Cape York - Central Australia trade routes with the opening up of central and western Queensland for pastoralism reduced, or even terminated, the injection of baler shell into central Australia from the north-east. This may have led to an increased demand for pearl shell that was moving into the centre via the Western Desert and the south Kimberley, corridors only marginally affected by pastoralism or other disruptive forces, until much later.

The role of Queensland baler shell in central Australian Aboriginal society needs to be examined further in order to determine if both it and pearl shell fulfilled similar functions. It is known that Queensland baler shell continues to move in a westerly direction from Central Australia (Akerman 1973: 124-125). These baler shell objects, however, have been incorporated into eashes of religious objects dedicated to specific ancestral beings, and do not appear to possess the more general qualities or connotations usually associated with pearl shell.

Carnegie (1898a: 243,395; 1898b: 269, 281-282) saw pearl shell at Helena Springs, Family Well and Mount Webb during his 1896-7 expedition. These shells were evidently not engraved, for although Carnegie does not remark on this point, he does discuss engraved wooden objects found at the same localities. It should be remembered that Carnegie also found carefully hoarded pieces of metal and sherds of glass in Aboriginal camps at these locations. It is likely that the shell, metal and glass entered the area from the north or north-west. As European settlement in the Kimberley had only really been established since the 1880s, the exotic items found at Mount Webb had moved a minimum distance of 520 km from Hall's Creek (established 1885) in eleven years or less, or a maximum distance of 1120 km from the Roebourne area (settled in 1864) in 33 years.

Between 1918 and 1925, as Bolam (1923: 78) has recorded, pearl shell was common at Ooldea. Both Bolam (1923: 105-106) and Bates (1938: 215) recorded Aborigines at Ooldea taking advantage of the Trans-Australian Railway system to organize religious ceremonies with other centres across the Nullarbor Plain. Petri (quoted in Micha 1970: 296) emphasizes the role of this railway in the transmission of religious ceremonies and associated artefacts in the 1950s. There can be no doubt that much of the pearl shell that reached Ooldea was transported by rail.

With regard to the development of the art work engraved on pearl shell, it has already been suggested that until the 1920s, zigzags, angular meanders and loose mazes were the normal non-figurative motifs. A basic form of the bilaterally symmetrical style, possibly based on a schematized anthropomorphic figure, is known to have been executed prior to 1900.

Shells engraved with the zigzag, angular meander and maze motifs were manufactured along the coast from the Eighty Mile Beach, north to the Dampierland Peninsula and the Buccaneer Archipelago prior to the 1920s. From the turn of the century, however, in centres at each end of the area in which shells were engraved, formalized motifs began to develop. These are based on the true interlocking key in the south and its bilaterally symmetrical counterpart in the north.



Plate 49. A non-secret wooden sculpture representing a spirit-child of the *Ngayunangalgu* man-eating spirit beings. A pearl shell pendant is depicted hanging on its chest. Jigalong, WA.



Plate 50. A non-secret sculpture of a spirit of a dead person or *nimadjara*. A pearl shell is bound by a hairbelt over the pubic area and small pearl shell fragments, of which only two now remain, were fixed with resin to its chest. West Kimberley, WA.

Originally applied by the Karadjari of the Eighty Mile Beach, the true interlocking key motif only appears on shell after 1920. Wooden objects are known to have been engraved with this motif at the turn of the century. It does not, however, appear to have been common at this time. Davidson (1949: 94) suggests that the motif was initially used as recently as the middle of the 19th century, when it began to replace the longitudinal zigzag motif which continued to retain importance in the area until the turn of the century. I believe that the interlocking key only assumed prominence at about the turn of the century and was neither skillfully nor regularly applied until the 1920s. From that time on, it was the predominant motif to be found in Karadjari art.

In the 1890s, on the Dampierland Peninsula and the adjacent Buccaneer Archipelago, a simple bilaterally symmetrical form of a possible anthropomorphic origin was sporadically engraved on pearl shell. This somewhat stellate motif could be said to be composed of five groups of parallel chevrons organised so that two groups delineated the upper arm and head, while the lower three groups separated the arms and legs. This motif and the parallel zigzag, either horizontally or vertically arranged, appear to be the only organised designs engraved with any regularity on pearl shell at this period. Haphazard meanders and irregular mazes continued to predominate throughout the area.

By a process of compartmentalising and reduction, the simple stellate form has changed through time into a bilaterally symmetrical schematized human figure, in which arms, torso and legs may be discerned. The upper limbs are composed of a single set of parallel lines that terminate at either end in an angular, asymmetric spiral divided by a reversal in direction of the line about the midpoint. The legs are similarly depicted, with a wider area left between the spiral terminations that encloses other elements. The angles where the lines turn are more often curved rather than abrupt, and the whole design is not as tight as that of the true interlocking key. Exceptions occur however, in which all the angles involved are abrupt and approaching right angles (Mountford and Harvey 1938: Fig. 2B).

Since 1988, pearl shell is again being engraved with geometric or non-figurative designs, based on the bilaterally symmetrical motif on the Dampierland Peninsula. In some cases, however, further reduction has led to the division of the shell into quadrants, not all of which contain engraving.

Pearl shell remains a much sought-after commodity of exchange in the central regions of Australia today. As McCarthy (1965: 72) suggests, in many areas pearl shell has replaced quartz crystals, and perhaps other similarly valued substances, as a medium for the production of magical or supernatural powers. The fact that pearl shell does not occur locally, and is generally not as accessible as quartz crystal, calcite or gypsum, which are commonly found over wide areas of Australia, may enhance its virtues. A brief discussion on the esoteric value placed on crystals by Australian Aboriginals, is to be found in Worms (1986: 73-74).

The rain-making rituals of the Wardaman as they were practiced in 1930 and the late 1950s have been discussed briefly by Davidson (1935: 157-169) and Arndt (1962: 170-172), respectively. As Arndt notes, the use of calcite rain stones had been abandoned in the period between Davidson's and his own field work, and rain-rituals based on pearl shell prevailed. The debasement of quartz, gypsum or calcite in Central Australia may be also influenced by the attitudes of prospectors and miners who generally have no interest in these minerals, but who would possibly show interest in a pearl shell simply because it was so far from the sea. In many parts of the Western Desert, quartz crystals have been replaced by cut crystal decanter stoppers and unusual or uncommon varieties of electric light globes, glass lenses and radio valves for similar reasons (Akerman 1979a: 249).

These many factors have led, since 1900, to the accelerated movement of Kimberley pearl shell across two thirds of the Australian continent. The current distribution and movement of shell objects indicate that, among the Aboriginal peoples of the Western Desert and Central Australia, the demand for pearl shell remains high, and that it has now superseded baler shell, quartz crystals and other minerals.

Between 1900 and 1970 the non-figurative motifs engraved on pearl shell reached their zenith of organization and execution. Realistic images also were regularly incised on shell. By mid-1920 the true interlocking key and the bilaterally symmetrical motifs were fully developed and applied regularly. This continued until about 1970 when fewer and fewer shells were being engraved at the coastal centres prior to being sent east and south. Unengraved shells continue to be traded, and the

engraving of zigzags, meanders and mazes onto these shells is now done by individuals at inland centres. The resumption of shell engraving in 1988 at centres on the Dampierland Peninsula is directed, at present, primarily at the art and craft market and is unlikely to affect wider cultural behaviour. People at centres removed from the source of pearl shell will probably continue to engrave the plain shells they receive either through traditional exchange networks or by direct purchase from commercial outlets.

CONCLUSIONS

An examination of the historical record and my own observations reveal several important factors relating to the roles played by Kimberley pearl shell within many Australian Aboriginal societies. The spread of pearl shell across the continent and its incorporation into pre-existing cosmological frameworks reflect a state of continual change and a social dynamism that belies the generally held view that Aboriginal society is static and unchanging. Pearl shell objects were initially undecorated, and it was these plain shells that first entered the exchange systems. Considering the rate at which objects could move across the country via the exchange systems it is likely that pearl shell only began to take on a wider and increased significance around 1900. Many of the motifs found on pearl shell, both figurative and non-figurative, can be shown to have been employed regularly only since the turn of this century.

Aboriginal attitudes to pearl shell range from one of aesthetic appreciation, both for the material and its associated art work, to the deeply religious. Pearl shells are still perceived as tangible evidence of deeper metaphysical phenomena, and as vehicles by which natural and supernatural events may be put in motion.

Future archaeological evidence, it is hoped, will emerge to establish more precisely how long pearl shell was utilised in north-western Australia.

Clearly the Aboriginal perception and use of Kimberley pearl shell, is one vital material manifestation of the ongoing, vibrant and creative nature of Australian Aboriginal society.



REFERENCES

Akerman, K. 1973. Aboriginal baler shell objects in Western Australia. *Mankind* 9(2): 124-125.

Akerman, K. 1979a. Trade and material culture in the Kimberley region. In: Berndt, R.M. and Berndt, C.H. (eds) *Aborigines of the West*: 243-257. University of Western Australia Press: Perth.

Akerman, K. 1979b. The renaissance of Aboriginal law in the Kimberley. In: Berndt, R.M. and Berndt, C.H. (eds) *Aborigines of the West*: 234-242. University of Western Australia Press: Perth.

Akerman, K. 1979c. Honey in the life of Aboriginals of the Kimberleys. *Oceania* 49(3): 169-178.

Akerman, K. and Bindon, P. 1987. Love magic and style changes within one class of love magic objects. *Oceania* 57(1): 22-32.

Arndt, W. 1962. The interpretation of the Delamere Lightning Painting and rock engravings. *Oceania* 32(3): 163-172.

Bain, M.A. 1982. *Full fathom five*. Artlook Books: Perth.

Barrett, C. and Croll, R.H. 1943. *Art of the Australian Aboriginal*. Bread and Cheese Club: Melbourne.

Barwick, R.E. 1982. The anatomy of an aircraft: a Warlpiri engraving. *Aboriginal History* 6: 74-80.

Basedow, H. 1925. *The Australian Aboriginal*. Preece and Sons: Adelaide.

Bates, D. 1938. *The passing of the Aborigines*. John Murray: London.

Bates, D. 1985. *The native tribes of Western Australia* (ed. White, I.). National Library of Australia: Canberra.

Berndt, R.M. 1941. Tribal migrations and myths centring on Ooldea, South Australia. *Oceania* 12(1): 1-20.

Berndt, R.M. 1959. Two love magic objects from Laverton, Western Australia. *Mankind* 5(8): 363-364.

Berndt, R.M. 1974. *Australian Aboriginal religion* - Fascicle 3. E.J. Brill: Leiden.

Berndt, R.M. and Berndt, C.H. 1945. A preliminary report of field work in the Ooldea region, western South Australia. *Oceania* bound offprint: Sydney.

Berndt, R.M., Berndt, C.H. with Stanton, J.E. 1982. *Australian Aboriginal art: a visual perspective*. Methuen: Sydney.

Berndt, R.M. and Stanton, J.E. 1980. *Australian Aboriginal Art in the Anthropology Museum of the University of Western Australia*. University of Western Australia Press: Perth.

Black, R. 1964. *Old and new Australian Aboriginal art*. Angus and Robertson: Sydney.

Blundell, V.J. 1975. *Aboriginal adaptation in northwest Australia*. Unpublished Ph.D. thesis. University of Wisconsin: Wisconsin.

Bolam, A.G. 1923. *The trans-Australian wonderland*. Modern Printing Co.: Melbourne.

Brandenstein, C.G. von. 1972. The symbolism of the north-western Australian zig-zag design. *Oceania* 42(3): 223-238.

Campbell, W.D. and Bird, W.H. 1915. An account of the Aboriginals of Sunday Island, King Sound, Kimberley, Western Australia. *Journal of the Royal Society of Western Australia* 1: 55-82.

Carnegie, D.W. 1898a. *Spinifex and sand*. C. Arthur Pearson Ltd: London.

Carnegie, D.W. 1898b. Explorations in the interior of Western Australia. *The Geographic Journal* 11: 258-287.

Cawte, J. 1974. *Medicine is the law*. University of Hawaii Press: Honolulu.

Clement, E. 1903. Ethnographical Notes on the Western Australian Aborigines. *Internationales Archiv für Ethnographie* 16: 1-16.

Crawford, I.M. 1968. *The Art of the Wandjina*. Oxford University Press: London.

Davidson, D.S. 1935. Archaeological problems of northern Australia. *Journal of the Royal Anthropological Institute* LXV: 145-183.

Davidson, D.S. 1937. A preliminary consideration of Aboriginal Australian decorative art. *American Philosophical Society Memoir* IX.

Davidson, D.S. 1938. Northwestern Australia and the question of influences from the East Indies. *Journal of the American Oriental Society* 58(1): 61-86.

Davidson, D.S. 1949. The interlocking key design in Aboriginal Australian decorative art. *Mankind* 4(3): 5-98.

Davidson, D.S. 1953. The possible source and antiquity of the slate churingas of Western Australia. *Proceedings of the American Philosophical Society* 97: 194-213.

Dussart, F. 1988. Women's acrylic paintings from Yuendumu. In: West, M. (ed.) *The Inspired Dream*. Queensland Art Gallery: Brisbane.

Edge-Partington, J. 1890-98. *An album of the weapons, tools, ornaments, articles of dress etc., of the natives of the Pacific Islands*. Facsimile published by Holland Press: London, 1969.

Elkin, A.P. 1930. Rock paintings of north-west Australia. *Oceania* 1(3): 257-279.

Elkin, A.P. 1933. Totemism in north-western Australia. *Oceania* 3(3-4): 257-296; 435-481; 4(1): 54-64.

Elkin, A.P. 1936. Initiation in the Bard tribe, north-west Australia. *Journal and Proceedings of the Royal Society of New South Wales* 69: 190-208.

Elkin, A.P. 1943. Foreword to *Art of the Australian Aboriginal*, pp. ix-xii, by Barrett, C. and Croll, R.H. Bread and Cheese Club: Melbourne.

Elkin, A.P. 1945. *Aboriginal men of high degree*. Australasian Publishing Co.: Sydney.

Elkin, A.P. 1948. Grey's northern Kimberley cave paintings resound. *Oceania* 19(1): 1-15.

Elkin, A.P. 1968. *The Australian Aborigines*. Angus & Robertson: Sydney.

Elkin, A.P. n.d. Unpublished 1927-28 field notes: 18-20, 42-45, 91-92.

Falkenberg, J. 1962. *Kin and totem: group relations of Australian Aborigines in the Port Keats district*. Oslo University Press and Allen and Unwin: Oslo.

Foy, W. von. 1990-1901. Muschelschamdeckel von Broome. Roebuck Bay, Nordwest - Australien. *Dresden Zoologischen und Anthropologisch - Ethnographischer Museums Abhandlung und berichte* IX (6): 27-31.

Gerritsen, J. 1976. *Mootwingee - the rockholes*. Gerritsen: New South Wales.

Giles, E. 1889. *Australia twice traversed*. Vol. 2. Sampson Low, Marston, Searle & Rivington: London.

Gillen, F.J. 1968. *Gillen's diary*. Libraries Board of South Australia: Adelaide.

Gould, R.A. 1980. *Living archaeology*. Cambridge University Press: Cambridge.

Green, N. 1988. *The Oombulgurri story*. Focus Education Services: Perth.

Gregory, A.C. and Gregory, F.T. 1884. *Journals of Australian explorations*. Government Printer: Melbourne. Facsimile edition, Hesperian Press: Perth.

Harvey Johnston, T. 1941. Aboriginal routes in the western portion of South Australia. *Transactions of the Royal Geographic Society (S.A. Branch)* 42: 33-65.

Hodgkinson, W.O. 1877. North-West explorations. *Queensland Legislative Council Journal* 25: 1-24.

Kaberry, P. 1937. Subsections in the east and south Kimberley tribes of north-west Australia. *Oceania* 6: 436-458.

Kaberry, P. 1939. *Aboriginal Woman*. Routledge: London.

Kimber, R.G. 1982. Walawurru, the giant eaglehawk: Aboriginal reminiscences of aircraft in central Australia. *Aboriginal History* 6(1): 49-60.

Kolig, E. 1981. *The silent revolution*. Ishi Press: Philadelphia.

Kolig, E. 1988. *The Noonkanbali story*. University of Otago Press: Dunedin.

Love, J.R.B. 1917. Notes on the Worora tribe of north-western Australia. *Transactions of the Royal Society of South Australia* XLI: 20-30.

Love, J.R.B. 1930. Rock paintings of the Worora and their mythological interpretation. *Journal of the Royal Society of Western Australia* 6: 61-73.

Love, J.R.B. 1936. *Stone age bushmen of today*. Blackie: London.

McCarthy, F.D. 1939. "Trade" in Aboriginal Australia, and "trade" relationships with Torres Strait, New Guinea and Malaya. *Oceania* 9(4): 405-438; 10(1-2): 80-104, 171-194.

McCarthy, F.D. 1965. The uses of shells by primitive man. *Australian Natural History* 15(3): 70-74.

McCarthy, F.D. 1979. *Australian Aboriginal rock art*. Australian Museum: Sydney.

McConville, P. 1985a. The origin of subsections in northern Australia. *Oceania* 56(1): 1-33.

McConville, P. 1985b. Time perspective in Aboriginal Australian culture: two approaches to the origin of subsections. *Aboriginal History* 9: 53-80.

McConville, P. n.d. Aborigines of the northern Tanami desert. Unpublished manuscript. University of the Northern Territory: Darwin.

Martin, J. and Panter, F.K. 1864. *Journals and reports of two voyages to the Glenelg River and the north-west coast of Australia*. Shenton: Perth.

Micha, F.J. 1970. Trade and change in Australian Aboriginal cultures. In: Pilling, A.R. and Waterman, R.A. (eds) *Diprotodon to detribalization*. Michigan State University Press: Michigan.

Morphy, H. 1989. From dull to brilliant: the aesthetics of spiritual power among the Yolngu. *Man* 24(1): 21-40.

Mountford, C.P. 1976. *Nomads of the Australian desert*. Rigby: Adelaide.

Mountford, C.P. and Harvey, A. 1938. A survey of Australian Aboriginal pearl and balar shell ornaments. *Records of the South Australian Museum* 6(2): 115-135.

Mountford, C.P. and Tonkinson, R. 1969. Carved and engraved human figures from north western Australia. *Anthropological Forum* 2: 371-390.

Mulvaney, D. J. 1969. *The prehistory of Australia*. Thames and Hudson: London.

Mulvaney, D.J. 1976. The chain of connection: the material evidence. In: Peterson, N. (ed.) *Tribes and boundaries in Australia*. Australian Institute of Aboriginal Studies: Canberra.

Nash, D. 1982. Aboriginal knowledge of the aeroplane 'Kookaburra'. *Aboriginal History* 6: 61-73.

O'Donovan, D. 1990. Hugo Rahner's essays (4). *Nelen Ynbn* 43: 10-17.

Peggs, A.J. 1903. Notes on the Aborigines of Roebuck Bay, Western Australia. *Folklore* 14: 235-67.

Perez, Fr. E. 1977. *Kalumburn*. Kalumburu Benedictine Mission: Kalumburu.

Petri, H. 1938-40. Mythische heroen and urzitlgeende in nordlichen Dampierland, northwest - Australien. *Paidenma* 1: 217-240.

Piddington, R. 1932a. Totemic system of the Karadjeri tribe. *Oceania* 2(4): 373-400.

Piddington, R. 1932b. Karadjeri initiation. *Oceania* 3(1): 46-87.

Porteus, S. D. 1931. *The psychology of a primitive people*. Longmans, Green and Co.: New York.

Rose, F.G.G. 1965. *The winds of change in Central Australia*. Akademie - Verlag: Berlin.

Roth, W.E. 1897. *Ethnological studies among the north-west-central Queensland Aborigines*. Government Printer: Brisbane.

Saville-Kent, W. 1897. *The naturalist in Australia*. Chapman and Hall: London.

Schall, A. 1985. *Aboriginal use of shell on Cape York*. Cultural Resource Management Monograph 6. Department of Community Services: Brisbane.

Schultz, A.S. 1956. North-west Australian rock paintings. *Memoirs of the National Museum of Victoria* 20: 7-57.

Schuster, C. 1951. Designs incised on pearlshell from north-western Australia and Tanimber. *Mankind* 4(6): 219-220.

Spencer, B. 1928. *Wanderings in wild Australia*. Macmillan and Co.: London.

Spencer, C. and Gillen, F.J. 1899. *The native tribes of central Australia*. Macmillan and Co.: London.

Stanner, W.E.H. 1933. Ceremonial economics of the Mulluk Mulluk and Madngella tribes of the Daly River, North Australia. *Oceania* 4(2): 156-175.

Stanton, J.E. 1981. Pearlshells and hairbelts. *Anthropology News* 18: 99-106.

Stanton, J.E. 1988. *Images of Aboriginal Australia*. The University of Western Australia, Anthropology Research Museum, Occasional Papers No. 2.

Stirling, E.C. 1896. *Report on the work of the Horn scientific expedition to central Australia. Part IV - Anthropology*. Melville, Mullen and Slade: Melbourne.

Stokes, J.L. 1846. *Discoveries in Australia*. Boone: London.

Strehlow, T.G.H. 1947. *Aranda traditions*. Melbourne University Press: Melbourne.

Tindale, N.B. 1974. *Aboriginal tribes of Australia*. University of California Press: Berkeley.

Tindale, N.B. 1987. Kariara views on some rock engravings at Port Hedland, Western Australia. *Records of the South Australian Museum* 21(1): 69-84.

Tonkinson, R. 1970. Aboriginal dream-spirit beliefs in a contact situation. Jigalong, Western Australia. In: Berndt, R.M. (ed.) *Australian Aboriginal Anthropology*: 277-291. University of Western Australia Press: Perth.

Tonkinson, R. 1974. *The Jigalong mob: Aboriginal victory of the desert crusade*. Cummings: California.

Trigger, D.S. 1987. Inland, coast and islands: traditional Aboriginal society and material culture in a region of the southern Gulf of Carpentaria. *Records of the South Australian Museum* 21(2): 69-84.

Walter, G. 1982. *Australia: land, people, mission*. Bishop of Broome: Broome.

Woods, M.E. 1943. First contacts made with Western Australian natives. *Early Days* 5: 34-42.

Worms, E.A. 1942. Die goranara - feier in Australischen Kimberley. *Annali Lateranensi* 6: 207-235.

Worms, E.A. 1950. Djamar the creator. *Anthropos* 45: 641-58.

Worms, E.A. 1986. *Australian Aboriginal religions*. Nelen Ynbn Missiological Unit, Kensington: New South Wales.

APPENDIX

ANNOTATIONS TO THE PLATES

Note: The prefix W.U. refers to the Photographic Register, Berndt Museum of Anthropology, University of Western Australia. All other sources of material are given in full.

Frontispiece. "This is for everybody - man and woman. This is rain. This is everything water." Mumbadadi, a Walmajarri elder, explaining the nature of pearl shell. Christmas Creek, WA, November 1990. Photo. P. Bindon.

1. Janjanu Jampijin, Pintupi-Kukaja elder cleaning the caleareous layer from a valve of pearl shell. The sharpened tang of a file is used to chip away the coarser material to reveal the nacreous interior of the shell. Balgo, WA. September 1980. Photo. K. Akerman.
2. A Walmajarri/Mangala man grinding down the back of pearl shell. A building brick as well as the sandstone slab serve as grindstones. The screwdriver in the foreground was initially used to remove the bulk of the caleareous layer. Tools, along with the shell and others in various stages of preparation, were kept in the small case. Mowanjum, WA. March 1977. Photo. K. Akerman.
3. Shell engraved by the late Butcher Joe Nangan, Nyikena elder. The dominant figure of the *Miritumiritu* spirit incorporates the large adductor muscle scar into the overall design. Broome, WA. November 1979. Photo K. Akerman.
4. A small pearl shell pendant, engraved with floral motifs, fixed with bitumen to a hairstring cord. The pendant was worn in rain making ceremonies by a senior woman at Wiluna, WA. Collected November 1972. Berndt Museum. W.U. P 11956.
5. Shell perforations.
 - a) Piercing achieved by sawing two grooves, one on each side of the shell and at right angles to each other. The shell is pierced at the point of intersection of the grooves. Dampierland Peninsula, WA. Collected 1978. Berndt Museum. W.U. 3581.
 - b) Shell pierced by drilling from opposite sides. Misalignment of the perforations and overlapping of the holes is evident. Dampierland Peninsula, WA. Collected 1973. Berndt Museum. W.U. 3462.
 - c) Pearl shell with perforation enlarged to obliterate traces of the technique used to pierce it. Dampierland Peninsula, WA. Collected 1973. Berndt Museum. W.U. 3455.
6. A large shaped and pierced undecorated pearl shell of the type known as *kuwon* by the Bardi and Nyul Nyul peoples of the Dampierland Peninsula. Dampierland Peninsula, WA. Collected 1973. Berndt Museum. W.U. 3455.
7. Engraving tools.
 - a) engraver (*milji*) made by binding a reversed dip-pen nib with sinew to a wooden haft. Warburton Ranges, WA. 1975. Berndt Museum W.U. 3494.
 - b) metal rod bound with rag to stick handle. Leonora, WA. 1973. Berndt Museum W.U. 3493.
 - c) Mandible of kangaroo with incisor still *in situ*. The snapped tip of the incisor forms a small gouge edge. Wiluna, WA. 1973. Berndt Museum W.U. 3495.
8. a) Engraving a pearl shell with a modified screwdriver. Laverton, WA. 1965. W.U. P2239.
b) Butcher Joe Nangan engraving a pearl shell. Broome, WA. Photo. K. Akerman.
9. Shell showing the super imposition of maze over a lightly incised, broad band design. Infilling of the initial design by cross hatching, and its general layout suggests the shell was originally from the Dampierland Peninsula. Collected 1973. Nicholson Station, WA. W.U. P3452.

10. Repaired pearl shells.
 - a) A broken curved blade repaired with spinifex resin at Wiluna, WA. 1972.
 - b) Shells with damaged margins smoothed and reinforced with spinifex resin. Left: Papunya, NT. Museums and Art Galleries of the Northern Territory. Abeth 2472. Right: Unprovenanced. Museums and Art Galleries of the Northern Territory. Abeth 2973. Photo. K. Akerman.
11. A small pearl shell that had been broken after engraving and subsequently reshaped. The reworked upper right hand margin now truncates the adjacent engraving. Gordon Downs, WA. 1991. Photo. K. Akerman.
12. Two unprovenanced shells engraved with virtually identical anthropomorphic motifs compared with the design derived from a shell collected at Minilya Station, WA, in the 1930s (Davidson 1937: Fig 43d). The similarity of the designs suggest that all three shells were engraved by the one artist. Photo. K. Akerman.
13. Plain valves of pearl shell form part of this collection of goods assembled for exchange. Other articles exchanged include spears and central Australian shields. Gibson Desert, WA. Photo. K. Akerman.
14. Small blades and a disc of pearl shell. The artwork on the two blades is very similar in style and execution and both may have been by the same artist. The discoidal shell pendant bears a multiple stellate or star motif more usually associated with balar shell pendants from Queensland, that are found in Central Australia. The linear element, consisting of three parallel engraved lines, suggests that is of Western Australian origin. Provenance unknown. MacAlpine Collection. Photo. K. Akerman.
15. Young initiated men at Jigalong, WA, prepare to meet formally, and in public, a ceremonial party from Wiluna. They wear hair belts and pearl shell and their bodies are painted with designs related to the rain making rituals in which both parties will participate. Jigalong, WA. 1966. Photo. R. Tonkinson. W.U. P3245.
16. Two men stand beside their camp at Coolgardie on the south-west margin of the Western Desert. They carry weapons and are decorated with body paint. About their necks are suspended plain pearl shell pendants. Early 20th Century. Coolgardie, WA Battye Library 72B/89.
17. Pencil and water colour sketch by Butcher Joe Nangan. A rainmaker *jalugangurru* crouches by the bough frame from which carved pearl shell are suspended. By hanging the shell in the hot, still air of noon, the rainmaker seeks to enlist the help of the *rai* spirits of trees, rocks, flowers and water to bring rain. The flashing of the shells in the sun is like lightning bolts and attracts rain-bearing clouds. The wren *Jirrjirr* was an important rainmaker in the *Bugarigara* - the dreaming. He was transformed into his zoomorphic manifestation during a huge earthquake. During *lajalaja*, the months October to December, his help is sought by rainmakers to bring rain to the parched earth. Australian National Gallery 87.226. Photo. courtesy Australian National Gallery.
18. Many Aboriginal healers in Western Australia and adjacent areas draw on minute pieces of pearl shell such as these as one source of their powers. Less than 20mm in length, these pieces are from Ooldea, SA. W.U. P1189.
19. Shells bearing the discoidal scars that result when cultured half pearls are harvested are now often utilized by Aboriginal peoples in remoter areas of Western Australia and adjacent areas. The discoidal depressions are said to represent ear head lights or the wheels of a vehicle. Such shells may be utilized in revenge sorcery to cause vehicle accidents. Wiluna, WA. 1984. MacAlpine Collection. Photo. K. Akerman.
20. A small decorated blade of pearl shell collected at Cape Leveque, WA, in the early 1990s. Berndt Museum W.U. P.11965-6.
21. This particular pearl shell was said to have been used to identify people who had been "responsible" for causing the deaths of others. With respect to this particular shell, a guilty person is likened to the fish, in the weeds or reef, trapped in the maze of the law. Wyndham, WA. 1974. W.U. P.2347.
22. A random zigzag design is engraved on this shell. These designs are among the earliest recorded. Sturt Creek, WA. Photo. K. Akerman.
23. Two shells showing regularly aligned zigzags.
 - a) with a regular alignment of the adjacent elements and angles in a vertical orientation. Parallel

alignment of the elements creates horizontal panels of similarly oriented elements. Broome, WA. W.U. P.11994.

b) Vertically oriented zigzags organized either side of a central axis. This design was said to represent flood waters on the Sturt Creek. Sturt Creek, WA. W.U. P.11973.

24. Lattice design created by the intersection of two opposed sets of zigzags incised into a broad shell blade. Fork Creek, WA. Photo. K. Akerman.

25. A young man decorates a novice with body designs. An incised wooden board, a public emblem of his status is held across the back of his head by his *yakiri* headband, itself an emblem of manhood. Jigalong, WA. Photo. R. Tonkinson.

26. Two shells engraved with variations of the linear form of the bilaterally symmetrical style.

a) The more orthodox form of the design has curved and oval elements that are balanced within the perimeter of the shell. Broome, WA. W.U. P.2346.

b) This more rigidly constructed composition has not been centrally aligned within the perimeter of the shell; consequently, the design appears incomplete. Moolabulla, WA. W.U. P.3448.

27. The two shells suspended from the hair-belt are both engraved in the hachured band variation of the bilaterally symmetrical style. Cape Leveque, WA. 1931. Macleay Museum 2017. Photo. J. Stanton. JES. 6810.

28. The anthropomorphic figure engraved on this shell is carefully organized about a vertically infilled rhomboidal element. Such complex designs incorporating a number of levels of organization were produced primarily at La Grange between 1930 and 1960. Derby, WA. W.U. P.11971.

29. A fragment of shell blade engraved with a ladder motif. Such work is usually found on smaller blades. Broome, WA. W.U. P.3461.

30. Stellate figures, while common on bivalve shell ornaments from central Australia, are unusual on pearl shell figures. One star appears on this shell collected in the Kimberley, WA. Stars also appear on a shell disc in Plate 13. Macleay Museum A. 2004. Photo. P. Stanbury P. 20656.

31. Concentric circles, squares and rhomboids are typically found in art of the Central and Western desert regions. As the engraving of shell declines on the coast and more and more shell is carved in desert oriented communities, it is expected that these motifs will be applied to shell more frequently in the future.

a) Unprovenanced. Volkmuseum der Universität, Zurich. Photo J. Stanton JES 6776.

b) Balgo, WA. Photo. K. Akerman.

32. a) This shell, engraved in the traditional figurative style with botanical motifs (leafy sprays, yams and flowers), was collected in Western Australia. The current provenance is, however, noted in the records of Museum für Volkerkunde, where it is registered as No.34858 from South Australia. It was recorded as being in the Hamburg Museum in 1937 by N.B. Tindale and collected originally from Roebuck Bay, WA (Mountford and Harvey 1938: 120-121). Mountford and Harvey illustrated this shell, presumably using Tindale's photographic negative, and inadvertently reversed the image (Mountford and Harvey 1938: 120, Fig.3A). Museum für Volkerkunde, Frankfurt-am-Main No. 34858. Photo. J. Stanton. JES 6706.

b) A small blade of *Placuna placenta* has a reptilian figure engraved at one end. Collected in early 1900s. Forrest River, WA. W.U.P. 11960.

33. a) "Cod is Love". Recorded by A.P. Elkin in his 1927-28 field notes, this shell shows a male wearing a hat and clad in shorts supporting a dolphin and dugong. On his chest and torso are the cicatrices of a fully initiated man. Macleay Museum A. 2014. Photo W.U.P. 12506.

b) The female dugong engraved on this shell bears body markings that appear to correspond to the traditional butchering patterns practised on the Dampierland Peninsula. The adjacent male figure is shown decorated with bands of white ochre, again typical of the body decoration patterns found north of Broome, WA. Museum of Cultural History, University of California and Los Angeles No X65-4855. Photo. J. Stanton. JES 6390.

34. a) A delicate blade made from the window-pane shell (*Placuna placenta*) is lightly engraved with a striped serpent. Forrest River, WA. W.U. P11961.

b) This shell was originally carved at Broome, WA, in about 1976 by Butcher Joe, and was photographed at Balgo in June 1978. The central feature, three serpents emerging from a *Jilla*

or spring, originally referred to a site on Dampier Down Station in Nyigina country. At Balgo, the iconography was reinterpreted and relocated to mythology relating to the Rainbow Serpent *Kutal*. Balgo, WA. Photo. K. Akerman.

35. This shell, probably originating from Beagle Bay or Lombadina Mission, was collected at Balgo Hills in 1958. The initials H.S. (*Hominum Salvator*), the palm fronds, and the phased moon are all Christian symbols. The original iconography has been augmented by the addition of a fish which is superimposed over an enigmatic hand and second phased moon. The quality and style of the additional engraving suggest that it was executed by a second artist. Balgo Hills, WA. W.U. P2351.

36. a) This representation of a biplane is incised in the traditional figurative style on the back of a pearl shell collected at Wave Hill in 1944. The other face is engraved with a meander design. The shell was said to have come from "the salt water country", that is, the Kimberley. W.U. P11970.
 b) This biplane, with wings and tail rudder rotated ninety degrees, is realistically incised on the back of a pearl shell, the other face of which is engraved with a complex maze. Christmas Creek, WA 1973. W.U. P1414.

37. Pearl shell engraved with a representation of an aircraft. This image has been interpreted as a crashed or damaged aircraft. La Grange, National Museum of Australia AS.9.

38. This finely detailed image of a saloon car is unusual in that it is shown in an oblique view. The ground or road surface is also indicated. Leafy sprays compartmentalize the shell. The butterflies and chevroned heart appear to be the work of a second artist. Macleay Museum A2007. W.U. P12493.

39. The vehicle engraved on this shell depicts a mission or church vehicle. Both the vehicle and the insect have been engraved with a pocket knife using the rocking technique, while the leafy branches or sprays of foliage have been incised into the shell. Collected by Gerhard Laves at Cape Leveque, WA. in 1931. Macleay Museum A2020. W.U. P12495.

40. A bus or station wagon, engraved in the traditional figurative style, shares a broken pearl shell with two serpents. Christmas Creek, WA. Photo. courtesy of the Victorian National Gallery.

41. Collected by Gerhard Laves at Cape Leveque, WA, in 1931, this shell is engraved with an enigmatic symbol that may represent the initials HO or OH. Macleay Museum A2035 W.U. P12503.

42. Baby turtles graze on fronds of the seagrass *Halophila ovalis*. Unprovenanced, this shell is now in the Macleay Museum A2005. Photo. courtesy of Dr P. Stanbury.

43. Painted shells are extremely rare, although engraved shells may be covered with ochre bands during ceremonial use. This shell, with two dancers carrying ceremonial wands, is painted in acrylics. The nature of the body decoration and the ceremonial accessories suggest that the original art work was done on the Dampierland Peninsula, where a number of artists proficient in both watercolours and acrylics have been resident at both Lombadina and One Arm Point in the past. Fork Creek, WA. W.U. P2349.

44. Pearl shells decorated by Buteher Joe Nangan. Broome, WA.
 a) *Yapayapa*. Five of the *Kumampa/Ngapanan* (the Seven Sisters or Pleiades) dance on the crest of a wave. The birds *Wiyirr* (wood swallow) and *Kuturrwayin* (brolga) are above them. The recurved objects are *wilany* rain clouds, while the wave like figures are reefs on the coast. These reefs can be summoned in dreams to cause illness or death. Broome, WA. 1984. W.U. P11995.
 b) The central figure is the selfish sister *Nyarinyaripungu*. She has taken the *milkin*, digging stick, of her sister *Walipungu*. The stick is really an *Inguruku* rainbow snake. It changes into serpent form and deposits *Nyarinyaripungu* high in the heavens. She is transformed both into a galah and a star, while her sister becomes another star and the short-billed corella. The sinuous line represents the reef eel *mirra*. The same name is given to the blind snake and both are manifestations of the Rainbow Serpent. Broome, WA. 1984. W.U. P11997.

45. Pearl shells carved by Basil "Biggie" Albert.
 a) A natural valve with the fragile calcareous layer still present is engraved with a graceful serpent arched over a tree stump. Broome, WA. W.U. P5934.
 b) A natural valve engraved with a male and a female Aboriginal equipped with traditional weapons and utensils, as well as an emu, snake and kangaroo. Broome, WA. 1978. Photo. K. Akerman.

c) This shell, prepared for traditional use, is engraved with aircraft and a motor vehicle as well as fish and a plan view of a dugong. This dugong engraved in this manner has been seen on a number of Albert shells and can often be used as an identifier in absence of other clues. Broome, WA. Photo. K. Akerman.

46. Modern pearl shells with bilaterally symmetrical designs were produced at Lombadina and Broome for the commercial market. Each design was said to represent a different species of fish or animal. The artists' names were not recorded, unfortunately.

- The design on this shell refers to *Pa-iudya* the sword, or more likely, the sawfish. Australian National Gallery 88.2404.
- Barnamba* the stingray. Broome, WA. Australian National Gallery 88.2405.

Photos courtesy of the Australian National Gallery.

47. *Wandjina* painted on bark by Alec Minjilmangarnu, Kalumburu, WA, in 1975. Although the black emblem on the chest of *Wandjina* has been occasionally interpreted as representing a pearl shell, it is in fact more usually stated by Aboriginal informants associated with specific *Wandjina* to be the sternum or breast bone. Photo. K. Akerman.

48. Among other stencilled objects on the walls of this rock shelter in the Grant Range, south Kimberley, is a large pearl shell (lower right). This richly decorated shelter, which also contains stencilled hands and arms in various positions, fire sticks, hafted stone axes and macropod feet is unique in the region. Photo. K. Akerman.

49. This carved and engraved figure is of a mischievous spirit-child (*Jijigargal*) of the man-eating spirit-being, one of the *Ngayunangalgu*. This race of beings is said to live beneath the surface of Lake Disappointment, WA. The *Ngayunangalgu* often appear to men in dreams and representations of them are displayed during public rituals relating to *badunjarijanu* or dream-spirit experiences (Mountford and Tonkinson 1969). This particular figure wears a large magical pearl shell pendant (*tuabau*) on its chest to indicate that this particular spirit is a powerful healer. Jigalong, WA. W.U. P18191.

50. A flat sculpted figure of a spirit *nimadjara/utimandara* wearing an engraved pearl shell. Originally affixed on the chest were four pearl shell blades, of which only two remain. The figure originally held an elongate thread-cross construction between its hands. Carved by a Bardī man, the figure represents the spirit of his dead father who appeared to him in a dream. The term *utimandara* refers to one aspect of the soul or spirit of a person. Collected by E.A. Worms in 1935, at Lombadina, Dampierland Peninsula. W.U. P.16815.

